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AND

ANNALS OF COMPARATIVE PATHOLOGY.

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EDINBURGH VETERINARY REVIEW

AND

Annals of Comparative Pathology.

ORIGINAL COMMUNICATIONS AND CASES.

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The Relations of Veterinary to Social Science: being the Inaugural Address, delivered on 31st October, 1860. By Professor JOHN GAMGEE, Principal of the New Veterinary College, Edinburgh.

PERHAPS at no time since the early days of medical education in Great Britain, has there been so much doubt thrown on the value of inaugural addresses at the opening of each session, as during the present year. The advantages of this time-honoured custom are, however, so great, that the movement on the part of some, who regard the words of advice annually addressed to students as superfluous, has been attended with a most favourable reaction.

It is my firm belief that very great benefit is derived, both by the teacher and the student, in availing themselves of a favourable opportunity to discuss the objects of their calling; and state, however briefly, the means to be employed, not only in acquiring professional knowledge, but in fostering all the noble sentiments which should inspire a professional man.

In our profession, circumstances peculiarly call for the clear statement of its duties and scope. It has been imperfectly understood and grossly misrepresented. A desire, on the one hand, to disregard and condemn much of the work with which every veterinary surgeon should be practically conversant, has been attended with evil consequences. Probably the result of this feeling has been more injurious on the progress of the veterinary art, than the fact that scientific research has been considered incompatible with the vocation of the veterinary practitioner; and if, perchance, any one has laboured in the literature and science of his profession, he has been declared no practical man. The instances have, probably, been too rare to ingratiate the truly scientific veterinarian with many who have not aspired beyond the ordinary field of practice; but, as agriculturists claim as their motto, "Practice with Science," and as the conquests of science over mere empiricism and traditional lore are better known and appreciated, the

wide bearing and necessarily scientific basis of the veterinary art must be better understood.

These homely truths suggest themselves to my mind, when I regard my profession from a scientific point of view. Its scientific basis elevates it above all non-scientific pursuits. By casual observers it may too often have been viewed as a mere trade: shoeing horses, selling physic, and destroying life where cure is impossible, degrade in the eyes of many a profession, the members of which have yet to assert, in unmistakeable terms and by more unmistakeable acts, the magnitude—the paramount importance—of the services they can render humanity.

Vegetius has said, "Ars veterinaria post medicinam secunda est;" and we often hear veterinarians refer to the medical as the sister profession. A distinction, gentlemen, must always exist, but it can only be a conventional one. The same spirit animates the two. Hence do we find amongst the learned pathologists of Germany men who freely state, ". . . Una est certissime medicina et hominis et veterinaria, idcirco hæc altera minime excludenda ab ordine medico."

My main object on this occasion is to point to veterinary students the real position of the science they have to learn and the art they have to practise, and elevate their thoughts from the mere trade, which is all-essential in its way, and which the wants or the greed of man too soon wed him to.

But I have another object in view, viz., availing myself of the privilege of a mixed audience, in fact, addressing the public, I consider it my duty to state, as clearly as possible, the various ways in which our profession, when followed out by enthusiastic and enlightened men, can confer advantages upon society at large.

The relations of veterinary to social science are varied and numerous. No period could be more appropriate to draw public attention to them than the present. Social science is better understood than formerly, and the general feeling is eminently in favour of inquiry on all subjects relating to that important department of the science, Public Health. A yearly increasing number of students flock to our colleges. The profession is growing in numbers, and it is essential to point out the many outlets for expending labour and talent of the best kind in a manner most conducive to public interests, and calculated to enhance the social standing of the veterinary surgeon. On former occasions I have strenuously opposed the opinion, that our profession is overstocked. I have, however, stated that there is a very ample field for the able and industrious. Mediocrity abounds. We now need excellence. But the best way of ensuring a higher class of men is to prepare the material for them to work at, and point out the many ways in which they can develope their powers either as observers, generalizers, or with some simply as practical workers in a field opened out for them by minds of broader grasp.

Legislation has much to do in order to ensure that we shall get that share of public work which should fall to us, and which could

be undertaken by no other body of men; but, to attract the notice of legislators, and assert our ability to fulfil many important duties, we must certainly be better prepared than we have been.

The subjects to be investigated, in order to reap practical benefits from scientific labour on sanitary matters, are vast and comprehensive. Their simple enumeration suggests to any one that there is much to be done, and, indeed, that there is no limit to these inquiries, as interesting as they are useful. Let us, for a moment, dwell on the part which should engage the veterinary profession.

In the first place, men and animals are subject to similar diseases—to diseases communicable one to the other, and to diseases which spontaneously originate either in man, in some instances, or in the lower animals in others, and are transmitted from first to second, or second to first, without other means of development or propagation. The study of diseases, in their comparative relations in different animals, constitutes the science of Comparative Pathology. It must be obvious to all that the amount of danger man incurs by living amongst animals, under different circumstances, should be known, but on this most important subject we need means of determining the spread of diseases in animals, their nature, and the extent to which they are committing ravages. That there are many unsuspected sources of disease in man, from the prevalence of disease in animals, is often suggested, but positive facts are with difficulty obtained. I must illustrate my meaning. In different parts of England, Scotland, and Ireland, cattle are subject to anthrax, commonly known as quarter-evil, or by the more ludicrous epithet, "black leg." We have to thank our northern latitude for the rare development, in these cases, of the virulent anthrax poison, which destroys many human beings in warm climates. So destructive is this poison, that flies resting on the carcases of animals that have died of this disease, or even on the parts affected in the living animal, may fly on to a man's face or hand, induce malignant pustule, and death in a short time. Though such accidents are doubtless extremely rare amongst us, we must not take it for granted that they do not occur. Dr Keith of Aberdeen related a case to me, where disease and death spread through the family of a man who dressed a carcase of an ox that had died of quarter-ill; and had we better means of collecting information on these subjects, many similar instances would doubtless come to our knowledge.

A cutaneous disease of very common occurrence in cattle, and which generally receives the name of ringworm, is a pustular eruption communicable to man; and I have often seen bad boils—a furunculoid eruption—on the hands and arms of those attending these animals, which has led to considerable indisposition, and been difficult to cure.

Again, I may mention the vesicular murrain so prevalent in cows, attended with the development of a virus, which is often squeezed into the milk-can as the cow is milked. Such milk, drunk warm, will kill calves and pigs, and induce fever and cutaneous eruptions

in men. Why shall it not be attended with dangerous and fatal consequences when partaken of by the infantile portion of the population, which consumes so large a quantity of the dairy produce!

But of late years considerable interest has been excited by the metamorphoses of parasites. In a piece of pork a few yellow specks or transparent vesicles, which do not appear of the slightest importance, may in reality be tapeworms in one stage of development, for the destruction of which we have to hope for prolonged boiling or efficient roasting. If the meat be eaten underdone, a parasite at once developes in the human intestine, which it sometimes baffles human skill to displace.

The veterinary surgeons throughout the length and breadth of our land should be accurately acquainted with the parasitic diseases of animals, and, however unattractive the study at first sight may appear, no scientific mind can fail to appreciate the advantages to be derived from a more extended knowledge of Helminthology.

Therefore, gentlemen, the sources of disease in man which are to be discovered by studying the diseases of animals, are far from few and trifling, and facts regarding them should claim the attention of the veterinarian. On this very interesting subject I have to recommend perusal of two very lucid and elaborate papers by Dr Lindsay of Perth, and my esteemed friend, Dr Richardson of London. Both these important contributions to comparative pathology were published in the first volume of the *Edinburgh Veterinary Review;* and I am proud to think that our annals of comparative pathology should contain the contributions of men so fitted to act as pioneers in the study of the sciences to which that journal is devoted.

Secondly, the diseases of men and animals are often due to similar causes. They are the result of cognisable agencies which operate alike on all living things, and their investigation, though almost exclusively engaged in by the medical man, should occupy the time and attention of enlightened veterinary surgeons. The evil results of overwork, over-crowding, absence of light in stables, as in dwellings, of artificial diet, of the nature of food as changed by modern cultivation, and the influence of such changes on animals, all constitute vast subjects for inquiry. The mysterious nature and operation of enzootic as of endemic influences, of epizootic as of epidemic influences, of miasmata and contagion, should as constantly occupy the members of our profession, devoted to the study of sanitary subjects, as the members of the profession of human medicine. All these researches, and, in fact, every part of veterinary science, has a bearing on agriculture.

It is a fact worthy of notice, that the Medical Officers of Health of the City of London—amidst their most interesting and intricate researches as to the influence of sewage emanations, and a host of similar causes that are to be observed in all crowded cities, contributing to fill our hospitals and swell mortality lists—specially allude to the injurious influence exerted by stables and byres. In these matters, backed by adequate authority, veterinarians should effect

much good. The *Medical Times*, in an article on the development of sanitary medicine, commenting on a report by Dr Lankester, says, "Stables are necessary nuisances. Horses or donkeys we must have; but then we ought to take especial care that they be kept in a suitable and laudable manner,—*i. e.*, up to the level of scientific sanitary requirement. But how seldom are they so kept! There are," writes the Doctor, "few sources of nuisance which are more constantly complained of, than ill-kept and ill-drained stables." In his own parish, he, Dr Lankester, has waged great and Garibaldian (successful) warfare against these Augean quarters, and reports the abatement of 208 out of 268 stable nuisances complained of. Happily, as it appears, the owners of horses are more readily worked up to proper sanitary sentiments in behalf of their quadrupedal slaves, than householders usually are in behalf of their biped tenants. As Dr Lankester says, "The reference to the notices of improvement in the stables, showed that the owners were quite alive to the value of the health of the animals that lived in them; a response which it is sometimes difficult to arouse in behalf of the human occupants of houses needing sanitary amendment." Dr Lankester's experience is encouraging, and it shows how, backed by the influence of authority, a person can accomplish that which, on the simple advice of professional men, can rarely be secured. Many of us have waged war against the denizens of filth and disease in which cows are kept, but we cannot boast of the success which has attended the assuidity of Dr Lankester as Medical Officer of Health

Sanitary reformers, in considering the history of epidemics, have of late years disregarded far too much, in my opinion, the contagious nature of diseases. Cholera, typhus, yellow fever, &c.—undoubtedly most destructive under the influence of defective hygiene—are maladies characterised by the development of a specific poison, which the Germans have termed the *contagium*, or principle by which contagion is effected. The investigation into the nature of contagium, of the many circumstances which influence and favour, or check it, presents to the veterinarian one of the most practical objects for inquiry that I am acquainted with. As Dr Richardson says, in the article before alluded to, the production of maladies by the discovery of their poison, which Dr Lindsay accomplished in regard to cholera, is one of the best means to settle questions relating to the origin of disease; and, by careful experiment, much is to be accomplished which has ever been regarded as obscure, and circumstances are reconciled, which, on a superficial observation, have been regarded as contradictory.

I may be permitted here to quote the concluding sentences of Dr Richardson's paper. He says:—

"1. That by experiment it might be proved, it what excreta of an affected animal the poisons of certain specific epidemics are located.

"2. By what surfaces of the body such poisons may be received, so as to excite their morbific effects.

"3. Whether the virus of a disease acts in the production of the phenomena

of the disease, primarily or secondarily, *i. e.*, by its own reproduction and presence, or by the development of another agent.

"4. Whether the effect of climate, season, temperature, moisture, and the like, in their influence on the spread of epidemics, act by modifying the poison which excites the epidemic, or by modifying the condition of the individual who is exposed to the poison.

"While the solution of any one of the problems suggested above would be a fact of the time, the inquiries themselves lie open to the veterinarian even more invitingly than to the physician. His opportunities are greater for such researches, and his increasing science is leading his mind each day nearer to the appreciation of their worth."

That Dr Richardson, imbued as much as any man I know with a catholic spirit and keen appreciation of the value of knowledge, does not agree with Vegetius in reckoning veterinary science as secondary to, and consequently distinct from human medicine, is proved by the last paragraph of the Essay so frequently referred to. He says:—

"Recognising, as I do, the importance to medicine of every addition to veterinary science and art, and the fact that medicine human and medicine veterinarian is as distinctly *one* as the animal creation is *one*, I feel greatly honoured in having the opportunity of introducing into this new literary work this brief and very incomplete paper."

Though too modestly estimating his contribution to our first Scotch veterinary periodical, Dr Richardson has proved, by much more than that short article, how far and deep the veterinarian can, with great benefit to himself and direct benefit to others, dive into the mysterious workings of nature.

It is obvious that the subjects I have alluded to, as constituting fit objects for inquiry on the part of the veterinarian, may be regarded as purely medical, and the investigations strictly scientific. Every observation pertains to science, and, with a scientific turn of mind, an individual cannot pass a day without remarking and reflecting on something new to him, if not absolutely new to the scientific world. For this reason alone, if no other existed, it is advisable that professional men should occupy positions which are calculated to offer facilities for observations of importance to mankind; and the appointment of Medical Officers of Health, of surgeons and physicians to hospitals in which subjects for scientific investigation, as well as for the sake of humanity, are congregated, tends to give a very decided impetus to the study of sanitary matters, and to the progress of medicine.

Veterinarians are debarred from these privileges. They cannot be debarred for long, as their services are urgently required. In France, Germany, and elsewhere, civil appointments exist for veterinarians; and by a satisfactory system of inspection, epizootic and contagious diseases cannot exist long without due attention being paid to them, and measures, often adequate to check the disease, being adopted.

There veterinary surgeons hold also positions as inspectors of slaughter-houses; and I can state, from personal experience of the class of men appointed to these offices, that they become very acute

observers of diseased conditions, and frequently prevent the sale of food unfit for consumption by man.

In considering, gentlemen, the relations of veterinary to social science, it is expedient that I should revert to the services which the public ought to expect from qualified men checking a dishonest trade in diseased animals. This is worse than all other dishonest trades, inasmuch as its effect is to ruin the health of many, though it more directly robs the poor of their means of sustenance, by selling innutritious, if not unwholesome food, and this at a price which, however small, must be exorbitant—the material being often worse than worthless.

It has been my lot to speak very openly on this subject, and incur the displeasure of those whose interest it is to keep up the trade. It was even sought by some to prove that I injured the farmers, though, in reality, none more than the agricultural community have an interest in the appointment of such inspectors, and this for various reasons:—

1*stly*, The sale of a large number of diseased animals tends to some extent to diminish the price of healthy stock. If the first were discarded, the second would necessarily, in any case, be raised in price.

2*ndly*, Every carcase can be proved of far higher value than the dishonest flesher usually thinks fit to give. A very common price allowed is L.1—occasionally much larger sums; but, as a general rule, the diseased animals would cover a great part of their first price as lean beasts, if turned to proper account, for purposes of art and manufacture. On this subject I hope, on some early occasion, to speak at greater length, inasmuch as thousands of pounds are annually lost to farmers, either by the dishonourable trade in diseased beasts, or by the absurd mode of burying a dead animal, and not procuring from it the materials of great value, which are improvidently wasted.

3*rdly*, Were well-educated veterinary surgeons to be appointed to slaughter-houses, they might in many cases, in passing an animal as wholesome which might have been supposed the reverse, check frauds which are rather common. As an instance of this, I may mention a case in which I was called in to condemn an ox for pleuro-pneumonia. I found him healthy, though suffering from slight temporary indisposition. Had I confirmed the opinion of the man who wished to condemn the beast, and said that the animal had the lung disease, it would have been sold at a great sacrifice.

Lastly, With the present system of meat inspection, diseases are entirely overlooked, or matters of minor importance are regarded as very serious. An organ might be condemned by the veterinary surgeon, whereas now the whole beast is destroyed, or *vice versa*. The agricultural community has, however, a direct interest that the veterinary profession should have the inexhaustible means of observation, to enlighten him on the diseases of stock, which can be furnished by no other means so readily as by the appointment of veterinary surgeons,

with salaries and authority suited to their stations as inspectors of slaughter-houses and dead-meat markets.

I am happy here to have an opportunity of confirming my opinion as to the advantages of slaughter-houses being availed of for scientific investigations, by quoting from the work of a very eminent Scotch agriculturist, Mr Stephens of Redbrae. Referring to scientific institutions of practical agriculture, he says:—"The slaughter-house should be fitted up to afford facilities for dissecting those animals which have been affected by peculiar disease. Skeletons, and preparations for illustrating comparative anatomy, could thus be found with little trouble."

I have to suggest, however, that such officers should not be appointed by, and be the servants of Town Councils. With every respect for many worthy men, serving the city in which they reside and their fellow-citizens, by accepting the honorary and responsible offices of town councillors, I unhesitatingly say that the authority for veterinary inspectors should come direct from Government, and, indeed, should in some way be connected with the Board of Health. This Board, and the accomplished officers which are attached to the Registrar-General, can alone estimate the importance, and suitably judge questions which might arise in connection with the proper inspection of the animal food of man.

To show the occasional inconsistency and perversity of municipal authorities on these points, I have only to refer to the slaughter-house inspectors in Edinburgh. I repeat, what I have often said before, that I do not wish to interfere with the honest and industrious men who serve this city to the best of their ability; but L.23,000 were spent not long ago in building suitable slaughter-houses, which are very perfect in all their arrangements, and would enable a professional man, with comparatively little labour, to judge of by far the largest quantity of the animal food consumed in this city. When the present very respectable, but non-professional, inspector was appointed, Dr Alexander judiciously proposed that a scientific man should hold that office. Doubtless, some of his duties could not be performed by a scientific man, but the most important can only be attended to by a person well acquainted with pathological anatomy and the diseases of the lower animals. I regret to say that it was a member of our profession who chiefly opposed Dr Alexander in his praiseworthy endeavours to obtain for the city of Edinburgh an efficient professional inspector.

The alleys and closes of Edinburgh are often complained of. It is notorious that in many parts typhus is a constant disease, clearing out numbers of the miserable poor who huddle together wherever they can procure shelter, a shelter poisoned not only by the filth and foul emanations dependent on the congregation of human beings, but surrounded by the darkest, dirtiest, and most unhealthy cowsheds, with all their disagreeable appurtenances. One person, once a flesher, is expected, as I stated in 1857 to the then Lord Provost of Edinburgh,

to be in attendance daily in the dead meat-market, to visit butchers' shops, be on the look-out at railway stations for carcases coming in from the country, call twice daily at the Police Office, and is likewise expected to draw up a report (which it is not in his power to do), giving the number and state of the byres and their inmates, to visit thereafter these byres, see if any sick animals are in them, and should he find any, to watch them narrowly, to ascertain how their carcases are disposed of. Gentlemen, the case is worse now than in 1857, because I can assert, on the best authority, that the inspector appointed for the slaughter-houses proved incapable of judging the carcases; and the dead-meat market inspector, on whom devolve the above duties, has, in addition to attend daily, to do the duty of inspector at the slaughter-house, and judge any carcase submitted to him. In 1857, both inspectors had been fleshers. I believe I am correct in stating that now only one who has been changed since then, has been accustomed to the trade, and to judge meat. With regard to appointing fleshers as inspectors, I said in 1857, in a letter which I addressed to the *Scotsman*:—

"1*st*, It would not be difficult to prove that as fleshers they are rather disqualified than rendered fit for the office of inspectors, being accustomed to certain practices peculiar to such trade, which almost precludes them having a strict and unprejudiced notion of what is really lawful and justifiable, and what is not. 2*nd*, All those conscious of the difficulty attendant on the performance of *post mortem* examinations and the recognition of morbid lesions, must give evidence to the effect that a scientific man can alone undertake the task of determining the nature and importance of appearances in the dead bodies of diseased animals. I need insist but little on this point; but as proof, I may mention having observed the extravasations of blood and acute phlegmons occurring in the malignant 'black quarter' of cattle, looked upon as simple bruises, and the carcases passed as wholesome, the animals being young and fat; and the tubercles characteristic of phthisis passed over as unimportant, because of common occurrence, and, provided the meat was marketable—viz., fat enough—the diseased parts were cut away, and the carcases sold."

This subject, gentlemen, is one which has interested me since the days I was a student in the London Veterinary College, when I wandered about the London dairies, and saw the disgusting practices incidental to the sale and consumption of diseased cows:—how the most filthy products of disease were hashed up with other meat, equally unsightly and unpalateable, to make sausages; how a lot of the carcases of cows were polished and dressed up with the fat of two or three young fat bullocks killed with them; and how the flesh of diseased animals not only found its way to the poor man's home, but to the table of the middle and upper classes, from the quarters sold to the butchers who could not kill enough weekly for their own consumption. Edinburgh people may be gratified by the knowledge that most of the bad carcases are trucked to London; but every person with the slightest regard for decency and humanity must revolt at the unmitigated evil which I have striven to expose.

There are difficulties in the way. They are so numerous, that the champions to face them will not easily be found. The gratitude of

the people would reward any public man who would seriously consider the question. No city offers better opportunities for a rigid system of inspection than Edinburgh, and only one objection exists, viz., its expense. This would be comparatively trifling; and I wish to ask, where is the person who would resist some infinitesimal tax upon the price of each stone of meat sold in Edinburgh, to ensure, so far as science can ensure, that the meat dressed daily for dinner is the *bona fide* nutritious food to be derived from healthy stock? The influence on veterinary science, by the opportunities which the office of inspector would give to the veterinarian, would soon be very obvious; and the persons required for such offices needing a better acquaintance with pathological anatomy and disease in general, than is usually possessed by students in leaving College, would compel many to work longer and harder in their profession than it has been usual to do.

I hail with pleasure any movement which turns public attention to our profession, and none would prove its public importance more than the judicious employment of veterinarians, as above stated. That the services of the veterinary surgeon are appreciated, is amply testified by the vigorous steps taken at present in Ireland to establish a Veterinary College. On that subject I have expressed a decided and favourable opinion, though I have already observed remarks in public journals condemning the project. The reason assigned is, that Irish students would benefit by contact with Englishmen and Scotchmen in the Veterinary Colleges of Edinburgh and London. I have distinctly declared that great difficulty must be experienced in procuring teachers, from the imperfect system of veterinary education followed out for the past; but a College in Dublin would undoubtedly give an impulse to the study of the science of Comparative Pathology—would attract more to the profession to practise as veterinarians in Ireland, and would greatly strengthen the veterinary profession.

On various occasions my advice as to the establishment of an Irish College has been sought; and during the past week Professor Cameron of Dublin has favoured us by a visit, to ascertain the best means of accomplishing this object. I believe that, in accordance with suggestions of my own, the young men devoting themselves with great assiduity to their studies during the forthcoming year, may look forward to compete for positions which will be awarded according to merit after a most rigid test.

The New Veterinary College is young in years, but, thanks to many favourable circumstances, it is sound in foundation, and is already fairly launched in an independent path of progress, in which it can with pleasure contemplate the co-operation of another institution, started with young and vigorous blood, to bear up in the hard race for simple sustenance in which it will have to run.

In my Introductory Lecture, in 1858, I mentioned how scantily Scotland, but more particularly Ireland, were supplied with veterinary surgeons. What a contrast when compared to the German States, in which our profession stands higher, as being more learned, than in

any other part of Europe! There are colleges in Berlin, Dresden, Vienna, Würtemberg, Munich, Carlsruhe, besides other professors of veterinary science in the different universities. All prosper; and we find one veterinary surgeon for every forty or fifty square miles of surface. Ireland should, therefore, have a veterinary college; but I wish the promoters of such an institution in Dublin to know that it is not a simple money question; and, unless the right men are secured at first, no amount of money can accomplish the worthy object they have in view.

I am particularly desirous to acquaint all here of the projected school, for this one reason amongst others, that intelligent young men, devoting themselves to the veterinary profession, with a serious determination to become thoroughly proficient, can look forward to many opportunities for engaging as teachers. Great changes must occur in a very few years more, and for truly able men, whose ambition has a certain limit, no profession offers a fairer prospect of success. It is true that he cannot look forward, like the medical man, to the prospect of a baronetcy, or, like a lawyer, to sit on the woolsack; but he can hope for as much honest gratification as an earnest worker in a most useful calling as any person need reasonably covet.

I know of no greater reward than that incidental to the conscientious discharge of professional duties; and the zealous teacher certainly experiences as large a share of this class of enjoyment as any other person. There are, however, many ways in which the straightforward dealings of a professional man are rewarded, and the veterinary surgeon is placed, perhaps, in a more delicate position, between persons of conflicting interests, than the member of any other profession. I need scarcely say I am alluding to many circumstances under which the veterinarian becomes a professional arbitrator—an adviser in the most delicate of all speculations, the purchase of a horse—a peace-maker, if possible, between men of the most opposite classes, some standing on their dignity, others keenly enjoying an intrigue, and all, perhaps, unreasonable, because not capable of fully understanding the nature of the real causes which create doubts and disputes.

It is often a thankless task to examine a horse as to soundness. A purchaser has found what he has been seeking for months perhaps; acting cautiously in horse transactions, and being probably asked an exorbitant price for the object of his choice, he desires to consult the veterinary surgeon. The horse is rejected, the purchaser is disappointed, and the dealer sadly displeased. An inclination on both sides to think the veterinary surgeon may be a little too strict, induces departure from his advice, and, in the course of time, when unsoundness is very manifest, appeal to another professional man, and this often leads to a long and expensive lawsuit.

The veterinary surgeon who is most skilful and most conscientious in detecting unsoundness, is the one who necessarily experiences the greatest delicacy in these matters, and who meets with most severe opposition on the part of those who care not to be scrupulously honest.

The motto of such persons in the horse trade is, "Make money honestly if you can, but, at all events, make money." As the Roman satirist says, "Rem facias, bene si possis; quocumque modo, rem." It so happens that live stock is the most precarious of all stock-in-trade. The nature of the article sold is invariably the subject of grave suspicion, and persons are not content until they have discovered some flaw. There are usually dozens of persons prepared to express their opinion on the subject; and every one who has frequented a stable any number of years is recognised as a qualified judge in horse matters. It is very clear that the veterinary surgeon has, as much as any professional man, full scope for an honourable, discriminating, prudent, and skilful exercise of his own judgment. Amongst the relations of veterinary to social science, I would class this as the relation of veterinary science to the science of moral duty. The patience of the professional man is severely tried in this branch of his calling. He is sure to displease some one; and when temptation is yielded to—a time-serving policy being adopted—it is often from a desire to serve the individual who has most in his power, or who, on the plea of friendship, claims to be dealt leniently with.

I must honestly aver, that since I have established the New Veterinary College, I have as much reason to feel satisfied with the discharge of this part of our duties as any other, though a firm and consistent line of conduct has met with the most determined opposition from many who fancy we might overlook small things, and declare animals sound or unsound, rather as it suits the circumstances than as it agrees with the facts before us in each case.

I purposely allude to this subject at some length to-day, because our experience is of some value to the veterinarian who commences practice. When formerly in practice elsewhere, I did not meet with the unsatisfactory and underhand opposition which I have met here; but in the city of Edinburgh, whether I pronounce a horse sound or unsound, several opinions diametrically opposite to mine are immediately obtained. Of this I am certain, that it is not a difference of professional judgment so much as an unworthy difference arising from rivalry, inasmuch as the most obvious cases of unsoundness have passed muster after receiving my unfavourable verdict. I have the greatest satisfaction of being able to prove, in every instance that I have yet traced, that I have not erred in judgment; and I may allude to two or three interesting cases of this description.

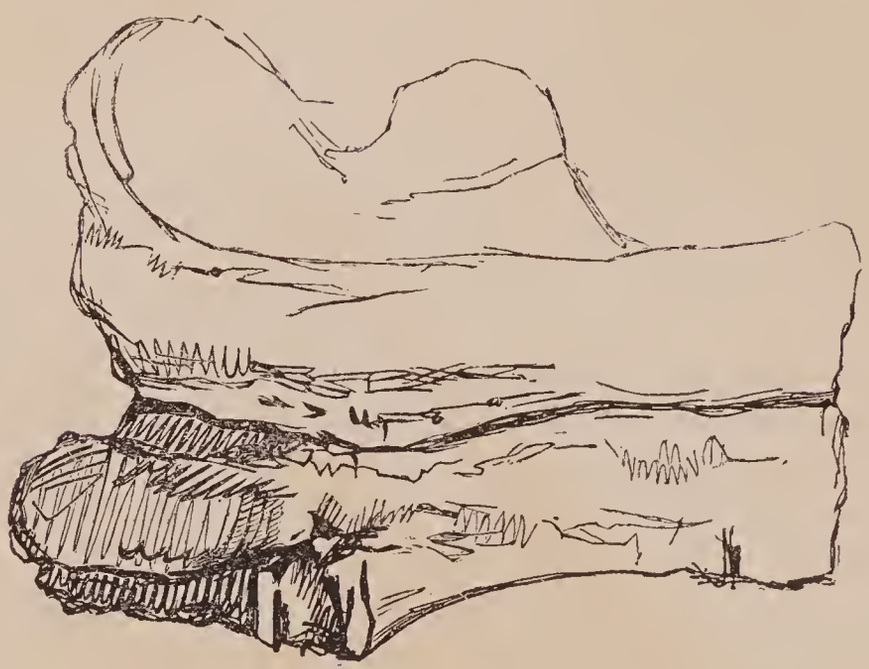
In the very earliest days of this College, a horse was brought to me to be examined. I at once rejected him as a bad roarer. My advice was sought by an intending purchaser, who, having tried the horse, liked him because very quiet and steady. He at once stated to the vendor that I had rejected the horse, whereupon another veterinary surgeon was consulted, and pronounced the animal sound. Hesitating whether to buy or not, my client waited a day or two, when the animal was set up to auction, and, evidently by means well known in the horse trade, a keen bidding was started, and the animal was

knocked down to my friend for L.45. The horse was taken to the country, proved to be a roarer, and it was then discovered that this precious gem was a cast-off trooper which had realized L.7 at the hammer not long previously.

The second case was one of peculiar interest, and it has been only within the last fortnight that I have obtained decided testimony that my father's opinion, who first examined the horse, and in whose opinion I subsequently concurred, was perfectly correct. A baronet honoured us by reference on the occasion of purchasing a pair of horses. One my father found a year younger than he was pronounced to be, and the other, a five-year-old horse, to have defective hocks, particularly the near one, and the defect chiefly consisted in slight enlargement in the seat of that well-known disease, "spavin," with want of elasticity in the movements of the joint. I unhesitatingly condemned him for spavin. The hon. baronet stood by our opinion, and a very handsome chance for the dealer was lost. I cannot precisely say how many veterinary surgeons immediately declared this animal sound; but as good fortune would have it, the animal took ill shortly after, and died. The hocks were boiled, and the bones kept, to be used in testimony against my father and myself. The horse-dealer positively refused that we should examine any more horses in his stable. This threat had been exercised before, and we were quite indifferent about the matter. Time rolled on, and during the last month an eminent veterinarian from the south of England told me that he had been conducted to a horse-dealer's yard, to be shown some hock bones which belonged to a horse we had, according to a veterinary surgeon's opinion, improperly condemned for spavin; but he found that we were perfectly correct. Another veterinary surgeon afterwards confirmed this opinion, and last week, on the occasion of my being requested to examine a horse, I was told that I had erred before, and should not examine the animal in question. During the conversation the dealer volunteered to show me the bones, and I declared myself prepared at once to avow error, in the event of proof being afforded me, that we had erred. It is remarkable and almost incredible, that both the hocks are diseased. Slightly, it is true, but even extending to roughness of the joint surfaces, as well as decided enlargement of the ridge on the cuneiform bones, as seen in the annexed woodcut, (fig. 1.) It is true that in a young horse, with slight spavin of the hock joints, the soft tissues alone might have been affected; but there is here positive deposition of bone, and unmistakeable signs of disease of some standing.

Gentlemen, it is perfectly possible for any one to err, but so careful are we, and we hope at all times so impartial, that I repeat we look back with great satisfaction to the way in which we have worked through this very delicate part of our professional duties. I state this in vindication of the practice and the principles of the New Veterinary College. I might multiply instances, but they are all of this class, and in two cases in which a lawsuit arose, and in which we

Fig. 1.*



had decided proof in opposition to the result of the trial, after-experience confirms the correctness of our judgment. Fortunately, in the large majority of cases in which a decided opinion has been expressed, the verdict has been on our side; though in all law cases it is our rule to act as simple witnesses, and not constitute ourselves advocates for the side on which we may happen to be subpœnaed.

But, gentlemen, though a fearless and honest course has unfortunately placed us in antagonism with many, I must say the soundness of our policy is proved by the best of all tests, and that is the degree of success in practice; and month after month has it increased, exceeding our most sanguine expectations.

We confidently look forward to the future. Beyond the small influence which I can exert for the honour and prosperity of our new Institution, there will be the combined influence of a body of our students, who will ever learn, we hope, from the lecturers in the New Veterinary College, that their profession is a noble and difficult one, and that with clear heads they must combine high principle, the sure and only pioneer in the business of life.

Cases in Practice. By J. Horsburgh, M.R.C.V.S., Dalkeith.

There are cases which, though seldom alluded to in veterinary works or by veterinary teachers, are yet of great interest to the public: cases in which questions arise as to the soundness of horses, warranty, &c., are frequently the cause of tedious and expensive litigations,

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* This woodcut is a fac-simile of a rough pen-and-ink sketch which I made at the time I was shown the bones; and I wish particular attention to be paid to the spicules of bone on the lower cuneiform, and to enlargement of the cuneiform ridge.

which might be avoided if some who buy horses acted with greater caution than they are usually in the habit of doing.

CASE 1.—Luxation of the patella is an affection which, though not frequent, is occasionally met with in practice. Perhaps the case after described may not strictly come under the designation of luxation of the patella, as dislocation does not actually take place; but as the use of the patella is for the insertion of strong ligaments, and for forming a fulcrum to throw the centre of motion further from the joint formed by the femur and tibia, the external condyle of these bones may sometimes be too small, and the great strength of the muscles, acting on the patella on the extension of the leg, brings that bone over the external condyle, which often produces a cracking sound. When horses affected in this way are put to work, considerable enlargement takes place in the synovial bursa of the joint, accompanied by emaciation. All such cases are incurable.

Some years ago, the late William Hunter, Esq., of Tynemount, bred a colt at his farm at Culterston, from a favourite harness mare; but during the winter, when the colt was about a year and a-half old, he was found to be in a very bad condition. I was called to see him, it being supposed that he had lice; but, on taking him to the door, the patella was heard to crack in both joints at every step. I at once pronounced him useless for work. Mr T. Spears, the farm manager, was then ordered to sell him at what he would bring. He was accordingly sent to Mr Wordsworth's Repository in Edinburgh, where he was sold for L.2, 15s. to Mr Baigrie, of Millarhill. Three weeks afterwards, that gentleman told Mr Hunter that the colt was nearly well, as he had discovered that he had worms, that he had mixed linseed oil with his food in order to destroy them, and that in a short time he would be quite well. Mr Hunter came to me, no doubt a little chagrined at the unfortunate mistake we had made, but I assured him that Mr Baigrie could not make him sound. Mr Baigrie had him for a year, during which time he gave the colt many gallons of linseed oil; but as this treatment did not produce the effect expected, he was sent to a horse fair, and was there sold to a medical practitioner in Haddington for L.2. The last account I heard of the colt was, that his owner had discovered that the defect was in the stifle joints, which had been fired, but I have not heard the result.

CASE 2.—Some time before the Marquis of Dalhousie left this country for India as Governor-General, he purchased a pair of Welsh ponies in London for L.40, as drosky ponies, for the Marchioness, and had them brought to Dalhousie Castle. As it was winter at the time, and the weather was rather rough, the groom, who saw that they were not well, thought that they might have got cold, and under this belief he treated them for a fortnight himself, but finding that they did not get better, I was sent for. When I arrived, I found that one of the ponies was so bad, that the least motion in the stall turned the patella over the external condyle, and paralysed the legs, and made him drag them

from side to side; the other pony was lame in the fore-legs. I explained to his Lordship the cause of the lameness of his ponies, and told him that they were useless, and that they could not be cured. I then found that his Lordship had purchased the ponies as five-year-olds, while they were only two-year-olds, and had none of their permanent teeth. His Lordship, who was no doubt much disappointed at the result of his purchase, got my certificate as to the state of the ponies, which he sent to London, at the same time offering them back to the seller, which offer, as is usual in such cases, was refused. I was again consulted as to what course should be followed, his Lordship being determined to have them sent back, if possible. Thinking it would give greater authority to my opinion to have them examined by another veterinary surgeon, and as I imagined that the name of Professor Dick would serve this purpose, I advised that he should be sent for, which was accordingly done. Having perfect confidence that the opinion of Professor Dick would coincide with my own, I never thought of making any arrangement to meet him at Dalhousie Castle. You may, therefore, judge of my astonishment, when, three days afterwards, I learned that Professor Dick had been out, and had pronounced the ponies perfectly sound, and had at the same time asked his Lordship's permission to castrate one of them which was entire, and that he had accordingly done this the following morning, thereby effectually preventing them being returned.

I examined them again after the one which had been castrated was healed, the result of which confirmed the certificate I had formerly given to his Lordship, but no further attempt was made to return them. They were kept about eighteen months, and, having been broken in, they were driven on one solitary occasion by the Marchioness to Newbattle Abbey, a distance of about two miles, and were got back with great difficulty; a second attempt was made, but the Marchioness had to return when she had gone about half-a-mile from home. The ponies were then ordered to be sold. Mr Main, the factor, sent them to a fair which is held here in May, but got no offers for them; they were then sent to Mr Ingles, of Rose Street, Edinburgh, and the pair sold by him for L.14.

Arthritic or Bone Disease. By WILLIAM THORBURN, Henchieland, Biggar, Student in the New Veterinary College, Edinburgh.

THIS enzootic affection was exceedingly prevalent last year in certain localities in the Upper Ward of Lanarkshire, which I had opportunities of witnessing. It was induced in cattle upon dryish lands, in an exhausted or indifferent state of cultivation, by the dry weather of last season, which stunted vegetable growth so much. Whole herds were crippled by it; but contagious or infectious it cannot be said to be. After prostration occurs in chronic cases, the greater number of animals thus affected are entirely condemned as unfit for human food.

Part of the osseous skeleton of one such animal, considerably deformed by distortions consequent on degeneration and tumours, I secured on 27th October, 1857. As the case appears rather interesting, I may be allowed to submit some observations upon it, before remarking further upon the disease generally.

The animal, I learned, had produced several superior bulls, being a cow of the Ayrshire breed, rising seven years of age, and having several good qualities. She was in good condition.

The *symptoms* I took notice of were: Animal carefully keeping a hind limb stuck out, and obstinately throwing it out again if tormented by being moved; seeming to suffer considerably; poking nose forward among fodder, and there resting head; appetite good; no constipation; pulse 80 and wiry; fistula on haunch, dependent on pelvic disease.

The *post-mortem examination* exhibited the internal organs perfectly healthy, except that penetrating objects, such as pins, and nails from old shoes, had caused abscess of the strong thick coats of the reticulum. Exploration of the abdomen produced a bull calf of about four months in utero. On my cutting into the left hip-joint, I found the ligamentum teres obliterated; the articular cartilage of the os femoris considerably destroyed, and even its bony head impinged upon by friction. The acetabulum was converted from a deep cup-shaped cavity into a glenoid or large shallow concavity, having parts slightly elevated. The polish produced by the articulatory head of the femoral bone, rendered ivory exostosis or eburnation evident. I found a great many osseous tumours on cutting down upon both hip-joints. More minute inspection, after part of the skeleton was macerated, detected slight incrustation over a good deal of surface of various bones. Even the ribs were implicated, and some of them, at several places, showed exostoses, indicating, where there was not much deposition, appearances of fractures. On trying to break what seemed a callus, it readily snapped asunder, exhibiting spongy exostosis at the ends. One of the larger tumours, a bony plate of nearly $\frac{3}{4}$ in. thick, and $2\frac{1}{2}$ broad, by 4 in. long, fully obstructed the outlet of the pelvis.

Remarks, treatment, &c.—Had the above animal lived some five months longer, till she attempted the expulsion of her fœtus, from the malformation, she would not have been equal to the task. The Cæsarean operation might, however, be sometimes admissible in such a case; peritonitis not being so much dreaded as in the horse. The fact of pregnancy in the above case, did not tend to favour the idea entertained by farmers, that the collapse stage, supervening in "*the stiffness*," (as they designate this malady), is not in such a case to be feared. On the earliest symptoms of arthritis manifesting themselves, such as an animal lagging behind the herd, the treatment I would be inclined to adopt would be to put the animal upon the best of pasturage, if close at hand, failing which, I would keep the animal closely bound up, and feed upon meadow grasses, tender tares, and other succulent foods. I have heard of the

best results from green barley. On a particular joint being detected stiffish, lacking joint-oil or synovia, use the starched apparatus, or, at least, use means to keep the joint motionless; fomentations, emollient poultices, arnica lotion, discutients, actual cautery or blisters, and stimulating liniments, may be employed locally. Blood-letting may sometimes be had recourse to. Sedatives, diuretics, and purgatives may be exhibited. I am aware of a case where straw from an exhausted farm was suspected as the direct cause of this disorder. The stock which consumed this oat straw having had a clean bill of health previously, in so far as this affection was concerned; indeed the succulent pasturage upon which they grazed, has been the immediate means of making good the recovery of the arthritic animal. Snails, not the large garden or edible snail, but the large black ones, are, as food, recommended by some in this malady; and I have heard of a recovery attributed to them, after prostration had occurred. Of another affected animal so treated, I have it on reliable authority, she actually acquired the habit of hunting for frogs with wonderful avidity when in the field. An acute attack of synovitis having occurred in the case of a third animal on this farm, she was taken from the light sandy soil of the park where she pastured, and put upon very good ground at the village of Ellsridgehill, instructions being forwarded to the effect that she should by no means approach any bleaching-green, or else a depredator would be likely to abscond with the linen forthwith. But, with regard to this depravation of appetite, her shrewd, observant owner was fortunately in some measure disappointed; for his prized animal left off her bad habit, and was safely entrusted near clothes. When her cure was complete, in the course of two or three weeks, she was returned, continuing to yield her wonted secretion of milk. She was subsequently disposed of to a party whose pasturage occasioned him no dread of this serious disorder. I am not aware of cod-liver oil, as a remedial, having been attempted for any considerable time, though I have heard of a gentleman in the Upper Ward of Clydesdale, accustomed to the treatment of the maladies of the lower animals, pressing upon the attention of his tenants the beneficial results which he anticipated from its exhibition in this distemper. I am strongly inclined to be of the opinion of this proprietor. Could our British chemists or other manufacturer of this oil supply a darkish or brown oil at a cheap rate, having somewhat of the fine qualities of Dr De Jongh's clear-brown Norwegian or Bergen oil, its internal use, which would be requisite for a month or more, might be practicable in severely affected cases. Previously to its administration, it would be well, I apprehend, to allow the animal milk, and gradually accustom the ruminant's stomach to animal fluids. I have known a gallon of linseed oil given in doses of about f. ʒv. to effect restoration. Linseed itself would likely have more beneficial effects. One of the first symptoms of the diseased condition setting in, is considered to be the animal's biting wood, chewing at leather, bones, coals, tiles, stones, and similar materials. On a small farm much subject to it, a

cow made off with a piece of cloth 12 feet long by about 1 foot broad. Her owner has observed amongst his stock that a cow noting a white object, will keep her eye upon it, and watch an opportunity to approach it. For such an object an agriculturist, whose whole stock continues to be injured by cachexia ossifraga, has remarked to me that they seem inclined to pass a turnip to get at it. With regard to this depravation of taste, one of these farmers has said to me, Cure it, and you cure *the stiffness.* Now I find the "Veterinarian's Vade Mecum" (p. 303), under the head Malacia in the Ox, recommends lime water, potash, gentian, bark, alum, sulphate of iron, chloride of sodium, hydrochloric acid. *Pica* viewed as a concomitant of arthritis or synovitis, throws light upon the foreign objects occasioning the considerable secretion of pus which I found in the stomach's coats of the case first recorded above. It likewise aids in the corroboration of a current report in the parish of Walston, near Biggar, having reference to herds in a quarter known as an especial seat of joint affection. By throwing pebbles in the way of the flock, the cow-herd, it is said, could scamper off to converse with a friend of an adjoining farm, thus keeping the cattle in check by "chuckie stones," and in effect tethering them "by the teeth" and tongue, as the author of "Clerical Economics" might depict them. In districts much liable to the malady, superior horses can be reared, and sheep may succeed satisfactorily enough; but cattle, however young, in occasional years are subject to arthrocace. The best milk-giving cattle are the most subject; and I am of opinion that increased house-feeding enables the creaking animal to keep up her supply of milk unharmed by symptomatic agalactia, and without falling off in condition. Spring is the season during which oxen are the most assailed. In this elevated district of the county, where tributaries of the Clyde and Tweed originate occasionally in the same spot, this serious lesion has prevailed excessively many years ago, and in some cases producing spontaneous luxation. A farmer relates to me that the cattle upon his farm, for twenty-one years, pastured upon heathery land, and amongst coarse grasses on very damp lands. His pasturage *could* then, and in several instances *did,* cure the stiffened animal; but since he has been liming and draining his farm, it has enabled him to keep more stock, and his milk-giving cattle have yielded more, with this disadvantage, viz., the stock, like those on neighbouring farms, has become damaged by *the stiffness.* During 1860, it has not, I believe, influenced farm stock generally to any very alarming degree, except on lands very much subject to it. I have seen the decidedly arthritic animal during this year, but it had come from a farm in the Upper Ward, which has long been extremely liable to it; so much so, that large excellent animals, worth about L.20, by one year's pasturing upon it, served to cause it in their case, though hitherto untainted by this diseased condition. I, however, presume, from my sphere of observation, that during the current year attacks of it have been rather rare, and comparatively mild.

Remarks on the above. By Professor JOHN GAMGEE.

THE foregoing communication is of the highest interest, for various reasons. In the first place, it establishes the existence of an enzootic disorder in an important agricultural district of Scotland, which hitherto has been unnoticed in this country. It has only been described by continental writers. I have been annually in the habit of lecturing on the disease, and especially referring to it, as observed in the Rhine provinces and in Switzerland. It is technically termed Cachexia Ossifraga or Malacia, and the Germans call it Knochenbrüchigkeit—Glieder Krankheit—Rackseusche, and Säure Krankheit. From the accompanying plate, it will be observed that the bones may be fractured at any part, as indicated by the ribs, whereas the joints first and most extensively suffer. This is seen by the drawing of the pelvis, indicating fracture near the acetabulum on the one side, and extensive disease of the same on the other. I purpose describing the lesions of the bone at greater length in the next number of this Journal, when another plate will appear. Space compels me to confine my remarks at present to the—

Symptoms of the Disease.—Under this head, I have to refer to the writings of German, French, and Italian authors, and from these we glean that the disease described by Mr Thorburn is the one alluded to as enzootic in various countries abroad. Generally, the malady developes in a slow manner. The appetite is at first not impaired; it soon becomes morbid, and the animals become hidebound and unhealthy in appearance. Emaciation manifests itself, and the secretion of milk diminishes. Shortly the limbs become stiff, and this is frequently indicated by the dragging of the hind legs, difficulty to rise, and soon indicating a disposition to lie much. The wasting of the body progresses rapidly, and so marked is the debility that it is soon impossible for the creatures to maintain the erect posture. The joints and bones then give way, particularly the hip-joint, the sacrum, and occasionally the ribs. There are frequently many fractures in the same animal. The disease lasts several weeks, though by appropriate treatment it may be arrested in the early stages. Occasionally the malady is ushered in by slight fever and rheumatic pains in the limbs, or with alternate lameness, *without pain or inflammation, and without fever.* In good cows, if the appetite continues, the secretion of milk may remain abundant, but there is visible emaciation. In some cases, the first symptoms have been painful inflammatory swellings of the joints with paralysis, the swelling disappears, but the paralysis persists. Some observers, says Hering,[1] think the disease depends on spinal irritation, and treat it accordingly. The fractures are unattended with pain, and manifest little disposition to heal. At the same time, by reference to the accompanying plate, it will be observed, from the rib drawn at fig. 3, that union occasionally occurs.

(To be continued.)

[1] *Specielle Pathologie und Therapie für Thierärzte.*

REVIEWS.

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1. *A Treatise on the Pathology of the Urine, including a Complete Guide to its Analysis.* By J. L. W. THUDICHUM, M.D., late Physician to the St Pancras Royal Dispensary, Lecturer on Chemistry at the Grosvenor Place School of Medicine. With Seven Plates. London. 8vo., pp. 429. 1858.

2. *The Composition of the Urine in Health and Disease, and under the Action of Remedies.* By EDMUND A. PARKES, M.D., Fellow of the Royal College of Physicians, Professor of Hygiene in the Army Medical School, late Professor of Clinical Medicine in University College, London, and Physician to University College Hospital. London. 8vo., pp. 404. 1860.

PERHAPS there is no department of Pathology in which English literature may now be considered so complete, as that relating to the urine. Of late years, book after book, possessing greater or less claim to permanent distinction, has appeared, while the number of original and valuable papers, which have been published during a similar period, would certainly defy an easy computation. These circumstances are not to be wondered at, when we consider the great importance attached to a thorough knowledge of the chemical and other characters of the urine, and how, without such knowledge, there can be no real acquaintance with many of the most common and most interesting diseases to which the body is subject. Formerly, Simon, Becquerel, Heller, were the names most familiarly known in connection with urinary pathology; now, however, in addition to those of Prout and Golding Bird, there are Beale, Thudichum and Parkes, whose works will be constantly referred to by the inquiring student. Both of the treatises, whose titles appear at the head of this article, are singularly complete, bearing unmistakeable evidence of much diligent study, of great research, and of the thorough acquaintance of their respective authors with the physiology and pathology of the urine. Dr Thudichum's volume commences with an account of the general characters of the urine, and then the author passes to the consideration of the quantity of the urine, and the various ingredients of the normal excretion. Urea, uric acid, creatine, and creatinine, uræmatine, (colouring matter of the urine), hippuric acid, chlorine and chlorides, sulphuric acid and sulphates, phosphoric acid and phosphates, free acid of the urine, potash and soda, lime and magnesia, iron, ammonia, and carbonic acid, these are all discussed at length, the more important in great detail and in separate chapters. We shall quote a few of the observations on hippuric acid, which being always present in the urine of the horse, may be allowed to possess a special interest for our readers. "Hippuric acid is a regular ingredient of the urine of man (Liebig) and the graminivorous animals, the horse, (from which

it derives its name), horned cattle, camels, (Schwarz) and elephants. It is found in guano, (Marchand) as hippurate of ammonia, and has been observed in the excreta of a tortoise, (testudo graeca), and in the excreta of the larvae of butterflies, and of butterflies themselves. It is absent from the urine of animals exclusively carnivorous. It may, however, be made to appear in their urine by giving them, with their food, hippuric acid, or any substance capable of forming it. The amount of hippuric acid in the urine may be considerably increased by the ingestion, with the food, of benzoic or cinnamic acids, or essential oil of bitter almonds. The consumption of a large amount of fruit, such as apples (Pettenkofer) or plums, (Prune claude, prunus domestica chlorocarpa, Duchek), will cause a considerable quantity of hippuric acid to appear in the urine. Duchek did not find hippuric acid to be a constant constituent of human urine. Hoefle could never find it in his urine. Pathologically, an increased amount of hippuric acid is met with in the acid urine of fever patients, (Lehmann) in the urine of diabetic patients. In one instance, hippuric acid was observed in the scales from ichthyosis (Schlossberger). Sometimes it occurs, together with uric acid, as a sediment. From the urine of horses or cows the acid may sometimes be obtained in the form of a yellowish-brown powder, by the addition of hydrochloric acid. It is, however, preferable to concentrate the urine to one-sixth, or one-eighth, of its original volume, before adding hydrochloric acid. The hippuric acid thereby obtained is very much coloured."

Having devoted ample space—the first sixteen chapters—to the consideration of the normal ingredients of the urine, Dr Thudichum proceeds to notice the occasional and abnormal constituents, and in the following order:—Blood, renal casts, albumen, pus, excess of mucus, fat and oil, cancer cells and tubercular matter, echinococcus hominis, (several cases are on record in which cystic entozoa have been passed by the urethra; they are formed mostly in the kidneys, more rarely grown in other parts of or adjacent to the urinary organs; such cases have been recorded by Dr Sieveking; *Lancet*, 1853; Mr Simon, *Lancet*, 1853; Dr Barker, *Glasgow Medical Journal*, 1856); spermatic filaments, or spermatozoa, bile and biliary colouring matter, leucine and tryocine, xanthine, hypoxanthine, sarcine or carnine, cystine, allantoine, sugar, acetone, inosite, purpurine, indican, (on this subject the author's interesting observations have received a striking confirmation from the important and extended researches of Dr Carter, (see the *Edinburgh Medical Journal* for 1859), carbolic acid, damaluric, oxalic and lactic acids. The last three chapters, 45, 46, and 47, are devoted to the consideration of those substances which never appear in the urine as products of the organism, but simply as substances passing through the body without undergoing decomposition. A chapter of addenda includes, among other notices, one of sarcina as it occurs in the urine.

We turn now to offer a similarly brief account of Dr Parkes's equally able work. It is primarily divided into two books. The

first treats of the urine in health, the second of the urine in disease. Under the former we find, first of all, a most important introductory chapter occupied with the consideration of the normal constituents of the urine. Here are collected together from all sources as many analyses as possible of the various urinary constituents in perfectly healthy persons, the mean results arrived at by each observer being taken by Dr Parkes. The amount of research undertaken by the author, in order to furnish this introduction alone, has been of the most extended description, and such as to call for our very hearty acknowledgments. All sources of value have been laid under contribution; the future inquirer in the same field will have his task very greatly lightened by referring to the labours of Dr Parkes. Chapter first is occupied with the variations in the urine during health, from physiological conditions; sex, age, race, and temperament, weight, height, pulmonary activity, food, liquids, fasting, exercise, sleep, mental exertion, &c., and such conditions as menstruation, pregnancy, &c., are all considered in the effect they seem to produce on the special condition of the urine. There follows in chapter second, an exposition of the variations in the urine during health, from the use of medicinal agents. These are ranged under five sections: 1. Inhalation of gaseous substances; 2. Applications to the skin; 3. Injections into the intestines; 4. Substances taken by the mouth; 5. Surgical appliances. Some notion of the amount of information this chapter contains may be learned from the fact, that under section 4, Substances taken by the mouth, there is a notice of the alterations produced on the urine by no fewer than ninety different substances. To pass to book second, the urine in disease, there is, first of all, an interesting introductory chapter treating generally of the abnormal constituents of the urine, and thereafter offering an enumeration of the urinary sediments. Chapter third succeeds, containing observations on the urine in acute diseases (not renal). Chapter fourth, on the urine in chronic diseases (not renal). Chapter fifth, on the urine in renal diseases, completes the volume. Under these three divisions there is scarcely a disease, the characters and condition of the urine in which does not receive some notice. In regard to some, the information supplied is no doubt meagre enough; but it must be remembered that this is a department of urinary investigation which has only lately received that attention it deserves. Certain we are at least of this fact, that the fullest and most recent information on all points will be found in Dr Parkes' pages. The name of this talented and excellent physician has been so well known for many years to the medical profession, and to all who are interested in physiological and pathological investigation, as to require no encomium from us, further than to say, in conclusion, and this we do with very great pleasure, that his present work is calculated still further to extend his reputation as an accomplished and skilled observer, and that it justifies the choice of her Majesty's government in the selection of Dr Parkes to occupy one of the important chairs in the New Medical College connected with the Army.

Atlas der Allgemeinen Thierischen Gewebelehre Herausgegeben von THEODOR von HESSLING und JULIUS KOLLMANN, nach der natur photographirt von JOS. ALBERT in München. Leipzig: 1861.

Atlas of the General Anatomy of Animal Tissues. By THEODOR HESSLING and JULIUS KOLLMAN; photographed from nature by JOS. ALBERT of Munich. Leipzig: 1861.

THE first part of this superb work is in our hands, and a more satisfactory collection of microscopical illustrations we have never seen. Photography is evidently destined to furnish the anatomist the most certain means of representing objects which are with great difficulty drawn or engraved. It has not always been successful, but the art has attained great perfection, and Albert affords us ample proof in the Atlas before us of how much can be accomplished by sun pictures, obtained with great care, and attention to conditions, the value of which the micrographer alone can appreciate.

The photographs of blood-cells are perhaps not as happy as one of the flat epithelial cells from the buccal membrane of man. This is a perfect representation of the beautiful scaly structure. Bone cells are admirably shown up, but they are comparatively easy to photograph, and we were most struck on examining Albert's plates by the striated muscular fibres. The clear, delicate striæ shown in a specimen magnified 350 diametres, are dark and broad when shown by the aid of a more powerful lens, as represented at plate 34. We are promised a very complete series of plates at a most reasonable price, and all interested in microscopic anatomy cannot well dispense with this excellent work.

Experimental Inquiry into the Composition of some of the Animals Fed and Slaughtered as Human Food. By JOHN BENNET LAWES, F.R.S., F.C.S., and JOSEPH HENRY GILBERT, Ph. D., F.C.S.

THE object of this interesting inquiry is clearly set forth in the opening paragraph of the work:—

"A knowledge of the quantitative relation of the organs or parts, and of the ultimate and proximate composition, of animal bodies, is of great interest in many points of view. More or less accurate conceptions on these subjects, are essential to the chemical physiologist, in determining the relations of the system to the matters ingested as food; nor is such knowledge an unimportant element in studying the changes which the latter undergo, and the offices they subserve, in their passage through the body. Especially, is a knowledge of the general composition of the animals slaughtered as human food of great importance in the application of chemistry and physiology to dietetics. This, indeed, is a branch of applied physiology, so to speak, which, owing in great part to the attention drawn to it by the labours of Boussingault, Mülder, and Liebig, from fifteen to twenty years ago, may be said to have entered upon a new era about that period. It is, moreover, daily gaining ground both with the physician and

the economist. To the farmer, too, who is engaged in producing animal food for the consumption of the community at large, it is very desirable to know something of the chemical relations of the substance so produced and sold, to the constituents expended in producing it. In other words, he should possess some data for determining what is the probable proportion of the consumed food, or of its several constituents, which he recovers in the form of *meat?*—how much he may calculate as *manure?*—and how much as *expenditure* or *loss* by the feeding process?"

As the elaborate work before us is devoted to a statistical investigation, and as the results of experiments are given in complex tables, with the use of the fewest possible words in explanation, it is difficult to offer our readers a digest of its contents. Indeed, we regret that we can only notice one or two points in illustration of the very interesting conclusions which Messrs Lawes and Gilbert have arrived at. Thus they say:—

"From the few summary statements that have been adduced, it is sufficiently obvious—though the details are worthy the closer attention of the physiologist—that in the feeding or fattening of animals, the apparatus which subserves for the reception, the elaboration, and the transmission of the food, does not increase so rapidly as those parts which it is the object of the feeder to store up from that food. These parts constitute the saleable '*carcass*' or framework, with its covering of flesh and fat. The tables of ultimate and proximate composition have shown, that of the *flesh* and *fat* of the carcass, which thus constitute the greater portion of the increase, the former—the *flesh* or *nitrogenous* portion—increases but little during the fattening process; whilst the latter—the *fat*—increases in a very much greater proportion. Of the internal parts, again, it is also the *fat* which increases the most rapidly.

"The maturing process consists, then, in *diminishing* the proportional amount in the whole body, of the collective muscles, membranes, vessels, internal fleshy organs, and gelatinous matters—or motive and functional, or, so to speak, working parts of the body—the constituents of which may increase the amount, or replace the transformed portions of similar matters in the human body. It consists, further, in *increasing* very considerably the deposition of *fat*—the most concentrated of the respiratory, and *non*-flesh-forming constituents of human food.

"It is, then, in our *meat-diet*, of recognised good quality, to which is generally attributed such a high relative '*flesh-forming*' capacity, that we carefully store up such a large proportion of *non*-flesh-forming, but concentrated respiratory material."

A most important summary is given of the relations of the non-nitrogenous or non-flesh-forming, to the nitrogenous constituents in animal food and in bread:—

"It has been established by analysis that the *entire bodies* of some of the most important animals fed and slaughtered for human food, even when in a reputed *lean* condition, may contain more *dry fat* than *dry nitrogenous substances.* This was the case with a half fat bullock, a store or lean young sheep, a half fat old sheep, and a store or lean young pig. Of these, the two last, indeed—namely, the half fat old sheep, and the lean pig, contained in their entire bodies, nearly one and three quarter times as much *dry fat* as *dry nitrogenous matter.*

"Of the animals 'ripe' for the butcher, a bullock contained rather more than twice as much *dry fat* as *nitrogenous substance;* a mode-

rately fat sheep nearly three times as much; and a very fat one more than four times as much. A moderately fat pig contained in its entire body also about four times as much *dry fat* as *dry nitrogenous matter*. Even a fat lamb yielded more than twice as much *fat* as *nitrogenous substance*. Of the professedly *fattened* animals, the fat calf alone contained rather *less* fat than nitrogenous matter."

The learned authors state at page 577:—

"It would appear to be unquestionable, therefore, that the influence of the introduction of our staple *animal foods*, to supplement our otherwise mainly farinacious diet, is, on the large scale, to *reduce*, and *not to increase*, the relation of the *assumed* flesh-forming material, to the more peculiarly respiratory and fat-forming capacity, so to speak, of the food consumed.

"That, nevertheless, a dietary containing a due proportion of *animal food* is, for some reason or other, better adapted to meet the collective requirements of the human organism, at least under many conditions, than an *exclusively bread*, or *other vegetable one*, the testimony of common experience may be accepted as sufficient evidence. Independently of any difference in the physical and perhaps even chemical relations of the supposed flesh-forming nitrogenous compounds in *animal food*, which may render them, at least in limited quantity, more easily available to the purposes of the system than the assumed analagous *vegetable products*, it is at any rate clear that the main and characteristic distinction between a *bread*, and a *mixed bread and meat diet*, consists, not only in the quantitatively higher relation of the respiratory and fat-forming capacity to a given amount of assumed flesh-forming material in the latter, but in the fact, that the *non*-flesh-forming constituents in the *animal* portions of the food, are in the form of *fat itself*—and not as in *bread*, of mainly *starch*."

In conclusion, they say:—

"But whatever may prove to be the exact explanations of the benefits arising from a mixed animal and vegetable diet, it is at any rate clear, that they are essentially connected with the *amount*, the *condition*, and the *distribution*, of the *fat* in the *animal* portions of the food. It is true, that the very basis of some of our illustrations has been the assumption, that *starch* and its analogues on the one hand, and *fat* on the other, are, in a certain sense, and within certain limits indifferently, mutually replaceable; and further, that they are so, in approximately measurable proportions. It is, however, certain, that independently of the mere *supply* of constituents, the conditions of *concentration* and *digestibility*, and, consequently, of *assimilability* of our different foods, must have their share in determining the relative values for the varying exigencies of the system, of substances which, in a more general or more purely chemical sense, may still justly be looked upon as mutually replaceable. It would, indeed, hardly be supposed, that substances so distinct, both morphologically and chemically, as *fat* and *starch*, will, under all circumstances, be equally adapted to the conditions supplied within the living organism, and be so at an equal cost to its energies, even though they may each eventually subserve the fat-storing and respiratory requirements of the body."

We have before had occasion to refer to the very remarkable investigations, pursued with extraordinary zeal and ability, by Messrs Lawes and Gilbert. Their researches bear directly on veterinary science, and, therefore, we turn the attention of our profession to them. The scientific veterinarian must henceforward refer to memoirs, such as the one above noticed, as contributing largely to the increase of his physiological knowledge.

EDINBURGH VETERINARY REVIEW

AND

Annals of Comparative Pathology.

THE SCOTTISH BOARD OF EXAMINERS OF THE ROYAL COLLEGE OF VETERINARY SURGEONS.

As the Examiners of the Royal College of Veterinary Surgeons are likely to have much and lasting work in Edinburgh, the Board has been wisely re-organized. We must express unqualified approval in the judicious appointments made by the Council of the Royal College. Professor Miller remains at the head of the Medical section of the Board, and will be most efficiently aided in his department by Dr Struthers, to whom the Royal College owes much. He boldly fought in the Highland Society for the recognition of the powers granted to the Veterinary Profession by Charter. This he did in opposition to local interests in favour of an illegal Scottish Examining Board, of which, in ignorance of the constitution of the Veterinary profession, Dr Struthers had been a most active member. The complete knowledge of anatomy possessed by Dr Struthers, especially fits him for the office he has just accepted. Dr Dunsmure has been re-appointed to the position he has so worthily filled, and will be supported now by one of the most eminent rising physicians this country can boast of. Dr Warburton Begbie will be one of the examiners in Materia Medica, and we believe that the Council of the Royal College could not have chosen a person better calculated to confer honour on its Scottish Board. The improvements in the new board as contrasted with the old one are most obvious in the Veterinary section. The new members are, Messrs Lawson, Robertson, and Secker. These gentlemen are eminently fitted to strengthen the hands of the worthy veterinary members re-appointed, viz., Messrs Cockburn, Cartledge, and Cowie. Mr Lawson is most favourably known as an examiner on the diseases of the horse. Mr Robertson is an excellent anatomist, and, at the same time, an eminent practitioner; and Mr Secker can most appropriately co-operate with Mr Cowie in examining on the diseases of cattle, sheep, and other domestic animals.

Withal, we must not forget that Messrs Lawson and Secker have

been appointed, though members of the Board which Professor Dick annually and illegally appoints. It is obvious that they have chosen now to renounce an illegal for a legitimate position; and all honour to them for such a step.

THE VETERINARY DIRECTORY, OR ANNUAL REGISTER OF VETERINARY PRACTITIONERS.

Our advertisement sheet announces the immediate issue of a Register, which we believe promises to be the most effectual check on quackery, and the most valuable record for the veterinary profession hitherto published.

Would a large section of the members of our profession have been ignorant to the present day of the fact, that they are not legally qualified—though holding a certificate they were led to believe to be valid—if such a Register had long since appeared?

Would the ordinary directories, and even the report of the census of 1851, name at random veterinary surgeons, and those not entitled to this qualification, if the work announced had seen the light? Could not the profession act better in its corporate capacity, if its members knew more of each other, and could obtain each others' addresses, and learn from an authentic source the numerical strength and distribution of qualified veterinary practitioners?

In a former number of this Journal, we expressed regret that the Register published at intervals by the Royal College of Veterinary Practitioners could not be referred to as an authentic source of information. We can, at the present day, repeat what we then stated regarding the inaccuracies and deficiencies of the Royal College Register, and we have also to repeat our recommendation that "the Council of the Royal College of Veterinary Surgeons should keep in view the Census of 1861. Much that is useful may be cheaply obtained, by politely requesting that in the estimates of the numbers occupied in trades and professions, the members of the Royal College be not classified with farriers, who, taking precedence by numbers, have precedence by position in the Census of 1851, as we there find the number of "farriers and veterinary surgeons" in Great Britain computed at "6562."

It is to be hoped that persons having any desire to see the profession hold a distinct and respectable position, will assist, by the most ample information, and especially by furnishing their own ad-

dresses and qualifications, and those of members advertised whose abode is unknown.

MR HALLEN ON THE TEACHING OF FARRIERY.

PROFESSOR SPOONER has been awkwardly tripped up by the veteran Mr Hallen. The latter has evidently not been seconded in his views by Professor Spooner, and this we glean from a letter published in the *London Standard*, of 2nd November last, and which we reproduce here:—

"VETERINARY KNOWLEDGE.—*To the Editor.*—SIR,—I was very much interested in reading in your journal Professor Spooner's annual address, delivered in the theatre of the Veterinary College, London. I was delighted to find one important branch of our profession is in future to be recognised—namely, the teaching of the principles of shoeing horses, which I had some years since been given to understand, from Professor Spooner, was a subject derogatory to our profession; and he has stated subsequently, that our interference in shoeing generated a feeling of jealousy in the farriers which would be as well avoided. I am now heartily glad the professor's opinion on this subject has undergone a change. I am led to suppose this is the case from his now announcing the principles of shoeing are to be taught by Professor Varnell. The professor goes on to observe, even now 'there are nooks and corners in the country into which it is our legitimate province to penetrate, but where we are but scantily admitted. The turf, methinks, with its splendid animals, representing great fortunes, yields us but a poor return of patients.' This, I confess, is too true, as regards the profession generally, although I know scientific and practical veterinary surgeons who are admitted into these 'nooks and corners,' and their merits are duly appreciated. What is the cause of the exclusion complained of by the professor? It is simply the want of properly testing the veterinary pupil when he presents himself for his examination: his practical acquirements are never inquired into; hence it is too frequently the case, although they obtain their diploma, they are quite at a loss how to examine a horse as to soundness, secure a horse for an operation, much less perform an operation properly; nay, I have even seen a veterinary surgeon, although he possessed the chartered diploma, attempt to take a horse's hind leg up by at once grasping the fetlock joint. What would be the opinion of a man conversant with the habits of horses if he had witnessed this rash act? Would he allow such a practitioner to attend one of his horses when requiring professional aid? I hope and trust it will be deemed right and proper by those who have influence in arranging the examinations so as to prevent non-practical men obtaining their diploma. If this is done effectually, Professor Spooner will no longer have to complain of the want of confidence in certain quarters, which he has now good reason to do.—I remain, Sir, your obedient servant,

"Hartlebury, October 29, 1860." "H. HALLEN, V. S."

There is one error apparently in Mr Hallen's letter. He has been

led to suppose that Mr Varnell was to lecture on shoeing. What will be his surprise when we draw his attention to Mr Spooner's lecture, as printed in the *Veterinarian*, where we find that the Professor has reserved for himself the onerous duty of enlightening the St Pancras students on the principles of shoeing. Perhaps, in his turf expeditions, Mr Spooner has overheard some sensible British nobleman speak in strong terms, of the value of having veterinary surgeons that understand the science and art of protecting horses' feet. We have often heard distinguished officers say, that every cavalry officer should know how to shoe his horse if this were possible. Perhaps some such hint from aristocratic quarters has convinced Mr Spooner that, had he spent some time at the anvil or the foot, rather than speculating on coming events, he might have been more comfortable in his position. We confess that we would rather like to know something more than we do—though at one time students of the London College—of Professor Spooner's principles of shoeing. The only principle we heard him frequently inculcate was, that the connection with the forge sank the veterinarian into insignificance and degradation.

THE SKELETON OF ECLIPSE.

The New Veterinary College has been enriched by the purchase of the skeleton of the horse regarded, since the days of his remarkable success, as unprecedented and unequalled. So far as man can judge from the facts recorded in the history of the turf, Eclipse combined the highest qualities a horse can possess. Fast and powerful, this animal was never beaten, though the horses of his day were as good as any that have ever been bred. Thoroughbred, and characterised by forms typical for horses of his breed, we can trace in Eclipse that which we may well wish to see reproduced.

It has been fortunate that the transfer of this skeleton to the museum of the New College has occurred before Bracy Clark's death, inasmuch as all doubts have been removed by the clear and satisfactory statement made by the renowned nonagenarian, during whose youth Eclipse lived and died. If the history of such a skeleton were founded on mere hearsay, its value might have been contested, but the letters published at the conclusion of this number clear up all doubts, and establish, beyond dispute, that but three persons ever possessed the skeleton of Eclipse. Dennis O'Kelly, who owned the

horse, Mr Bond, his veterinary surgeon, and Mr Bracy Clark, who received it after Mr Bond's death, for services rendered to Mr Bond. The name of Vial de St Bel is connected with the skeleton only as the dissector, and author of a treatise on the Proportions of Eclipse. Mr Bond was Vial's first pupil. Regarding the death of Eclipse, his dissection and partial burial, Bracy Clark says, in his "Short History of the Celebrated Race-Horse, Eclipse:" "He died at Canons, on the 28th of February, 1789, of the gripes, at the age of twenty-five years; and cakes and ale were given *at the funeral of his flesh*, after the manner of the Godolphin Arabian; for his skin was preserved, and his bones were nicely cleared of every covering but the ligaments that held them together, by the masterly hand of St Bel, the first professor of the Veterinary College, and an excellent anatomist, in which, more than in anything else, he excelled." These facts Mr Bracy Clark repeated to Mr Gamgee, senr., in whose hands the skeleton was delivered. Probably the signature on the receipt for the price of this skeleton is the last this illustrious veterinarian penned, inasmuch as he died within a month after the period the bones of Eclipse were removed to Scotland. The sum of one hundred guineas is but small to secure to a College the most remarkable skeleton of a horse in existence; and it is a matter of national interest that it now belongs to Modern Athens.

THE IRISH VETERINARY COLLEGE.

In the subsequent pages we have reprinted a statement and prospectus referring to a proposed Irish Veterinary College, and omitting, for want of space, a judicious leader published in the *Agricultural Review* of October the 12th; we insert, however, some remarks from the *Irish Farmer's Gazette*. The information contained in the two articles quoted is sufficient to indicate that there is a difference of opinion in Dublin as to who has a right to further the establishment of an institution essential in any country possessing the characteristics of Ireland. We cannot occupy our minds with local and petty disputes, which seem to us not altogether laudable under the circumstances. In justice to the promoters of the partial scheme embodied in the prospectus before us, we must say that they might have been met in a different spirit by the opposing party, which, though tacit, and *waiting a favourable opportunity*, cries out the moment a tangible plan is suggested. At a distance from the scene of dissension, and

with the most friendly feelings towards individuals engaged on either side of the battle-field, we beg leave to suggest:—

1*stly*, That a veterinary college requires to be an independent institution, with a staff of teachers, accommodation for the purposes of instruction and for the treatment of sick animals, such as have not hitherto been obtained by connecting one professor with a university, agricultural college, society, or other similar institution.

2*ndly*, Powers granted by charter as far back as the reign of George III., when no veterinary profession existed in these dominions, cannot annul the clearly expressed privileges granted to the profession in 1844, and every teaching veterinary college requires authority in terms of the Charter of the Royal College of Veterinary Surgeons. This, it is true, is easily obtained since the establishment of the New Veterinary College, but it is essential, and diminishes the importance which has been attached to the assertion that the Royal Dublin Society can create and authorise a veterinary school.

3*rdly*, The Royal Dublin Society was more fortunate than any body in England or Scotland in obtaining money in advance to establish a veterinary college. The London Veterinary College has alone, in the early days of its existence, received parliamentary grants, and the *Irish Farmer's Gazette* is wrong in imagining that any college in Scotland has been similarly favoured. The Royal Dublin Society is therefore in an unfavourable position to claim great efforts in behalf of forming a veterinary school.

4*thly*, The gentlemen who have issued a prospectus in Dublin independently of the Royal Dublin Society, have not perhaps weighed all the difficulties, and £5000 will only suffice for a commencement.

5*thly*, We believe it is to the interest of all concerned, and of Ireland in general, that conflicting bodies should meet on neutral ground and come to an amicable understanding as to the common object in view, and means of realizing it. Their efforts must be directed to the establishment of an independent veterinary college, patronized by the Agricultural Societies, and authorized in terms of the Charter of the Royal College of Veterinary Surgeons. The greatest difficulty rests in the choice of its veterinary teachers. By adopting proper means, and taking sufficient time, the right men will be found to undertake the onerous duties involved in the foundation of a new institution.

MEETINGS OF SOCIETIES.

MEDICAL SOCIETY OF LONDON.

Monday, October 8th, 1860.

Dr A. B. Garrod, F.R.S., President.

The Society held its first meeting for the session this evening. There was a goodly assemblage of Fellows and visitors. It had been announced that Dr Richardson would read a paper; but owing to some misapprehension he did not do so.

Dr Thudichum accordingly read a communication

On some Chemical Questions in connexion with Diseases of the Liver, and their Treatment.

The author first referred to a paper on gall-stones by himself, formerly read before the Society. In it he had stated that he had observed, in the centre of some biliary calculi, certain peculiar pathological formations, which he interpreted as casts of the biliary ducts; and that this interpretation had been confirmed by many others to whom he had shown the specimens.

The casts of the biliary ducts, thus described, were found by Dr Thudichum to contain a large quantity of cholochrome (colouring matter of bile) precipitated in a granular form. The presence of this substance was evidently not due to mere imbibition, but denoted the breaking up of the process by which it had been held in solution in the healthy bile. This had led Dr Thudichum to investigate the properties of cholochrome; and he had arrived at certain results in regard to it, part of which he had communicated to the Physiological Section of the British Association at Oxford, and to the British Medical Association at Torquay. He now proceeded to recapitulate these results, with additions; then to construct a doctrine of the formation of gall-stones; to describe some original investigations on the parenchyma of the liver in health and in disease; and to give some hints as to the treatment of liver diseases.

Dr Thudichum gave an account of the experiments he had made with the view of determining the composition of cholochrome. He then went on to describe some experiments which he had made on the changes undergone by bile during putrefaction. Some large bottles, full of bile, had been allowed to stand for two years and one year respectively. The bile had assumed a feebly acid reaction, a bright port-wine colour, and had deposited a copious flaky, green-and-brown deposit, mixed with white chalk-like particles and greenish crystals. This deposit, on analysis, was found to consist of cholochrome, cholic acid, phosphate of lime, and magnesia, in dichroic crystal and mucus. The fluid part of the bile was found to contain cholate of soda, taurine, and acetate of soda, phosphate of soda, and some valerianate of ammonia; but no glycocoll, nor any tauro- or glycocholic acid. It was quite clear that the bile had had spontaneously undergone that decomposition which is effected by boiling with acids or alkalies—a decomposition, which, in its main features, has already been described by Gorup-Besanez. Glycocholic and taurocholic acids had split respectively into glycocoll, taurine, and cholic acid. Some valerianic acid had been formed from some decomposing substance or other, which had combined with ammonia, probably arising from the decomposition of glycocoll. Glycocoll, being the amido-acid of acetic acid, no doubt in this process, as in the putrefaction of urine, yielded the acetic acid, which combined with the necessary amount of soda, and precipitated a portion of the cholic acid; while the greater portion of this acid remained in solution, combined with soda. The cholochrome had, no doubt, been precipitated by the new acid before cholic acid, as its acid properties are much less pronounced.

In examining human gall-stones, Dr Thudichum had found a resinous matter, of which, however, he had been prevented, by the small quantity and other difficulties, from determining the composition. In ox gall-stones, however, he had succeeded in finding cholic acid, in such quantity that there could be no doubt of its having been deposited with the cholochrome during the formation of the concretions in the living animal. The presence in almost all biliary concretions of earthy and alkaline salts pointed in the same direction. These were either present in the form of phosphates and carbonates of lime and magnesia, or were combined with the colouring matter of the bile. In gall-stones from man, the colouring matter was accompanied by a larger proportion of inorganic salts; but, in gall-stones of the ox, the quantity of cholochrome preponderated to so extraordinary a degree over the earthy matter, that it must be assumed to be present in the free state, and not as some have supposed it to be always—namely, combined with lime.

As matters now stand, essential constituents of gall-stones seem to be cholochrome, cholic acids, and earthy salts. In man, gall-stones contain a large amount of cholesterine in most cases; but that is a secondary and accidental ingredient, and is mostly crystallized around the other matters forming the nucleus. There are human gall-stones, which, like those from the ox, contain no cholesterine. Others are said to consist entirely of cholesterine—a statement which requires to be verified by fresh analyses, which must prove the absence of cholic acid. Stearate and palmitate of lime are usually present in human gall-stones. The idea of an inspissation of mucus in the formation of gall-stones was shown by the author to be untenable; the binding materials of the concretions is cholic acid.

The process of the formation of gall-stones was explained by Dr Thudichum to be perfectly analagous to that which produces phosphatic calculi in the urinary bladder. The compound amido acids (taurocholic and glycocholic) split up under the influence of a cause of which the nature remains to be ascertained—probably a ferment from the intestinal canal. They deposit cholochrome and a portion of cholic acid, some salts, and a little fat, under the influence of acetic acid derived from glycocoll. In man, gall-stones contain cholesterine; this has, in the healthy bile, been held in solution in taurocholate of soda; but when the taurocholic acid is decomposed, the cholesterine is set free, and is deposited on any particles which may be at hand. In other words, the process of formation of gall-stones is the following:—

Healthy bile contains taurocholic and glycocholic acids, in combination probably with soda. Under the putrefactive change, these two acids split up; the taurocholic acid yielding taurine; and the glycocholic acid, glycocoll. Cholate of soda is left; the glycocoll is destroyed, and is transformed into acetate of ammonia. Valerianic acid is also formed, and combines with the ammonia from the glycocoll. Some free acetic acid then sets free the cholic acid from the cholate of soda, and the cholic acid is then precipitated in combination with cholochrome, so as to form casts of the tubes. This takes place in the ox; in man, cholesterine is also deposited in consequence of the breaking up of taurocholate of soda, which has held it in solution.

Within the last few weeks, Dr Thudichum had examined the products of decomposition of fibrine, and had found amongst them cholesterine; which, with a gritty matter and an oil-like body; were left when all the matters soluble in water were removed. The presence of cholesterine and gritty matter in atheroma led to the question whether this condition was not a simple result of the decomposition of fibrine or of albuminous matter from which the earthy particles had been washed out. It was further a question whether the cholesterine in gall-stones might not in part arise from the decomposition of cholic acid.

Dr Thudichum then noticed that the healthy action of the liver-cells consists in the absorption of certain albumious, fatty, starchy, and saccharine matters, and their transformation into the ingredients of bile. When this becomes impaired, the cells assume a fermentative tendency, leading to the same description of decay in the albuminous matter as that which is induced by putrefaction, or by treatment by acids or alkalies. He then proceeded to point out that the general prin-

ciples elucidated in his paper could be applied in the treatment of all liver diseases. In jaundice, with obstruction of the biliary ducts, we should make early use of nitric acid or nitro-hydrochloric acid. He had with great benefit given a watery solution of nitrous acid. It is easily made, and may be drunk as a pleasant lemonade. It is less apt to produce griping, which, during courses of nitric acid and aqua regia, is not rarely complained of. This acid not only destroys and lixiviates the deposits of cholochrome and other amido-acids, but it also tones the digestive organs, and acts antiseptically. Nevertheless, a remedy to stay the abnormal action of the liver cells, we are yet in want of. Creasote is beneficial. In all cases where the disorder of the liver proceeds from the intestinal canal particularly, creasote, charcoal, astringents like gallic acid, and preparations of iron, particularly the tincture of the sesquichloride given together with some nitric acid, are highly beneficial. In a case of desquamation of the epithelium of the kidneys, consequent upon chronic jaundice, he had exhibited this latter mixture with the most decided benefit.

Nitric acid was introduced into the treatment of these diseases by Annesley. Many have used it since, with variable success. Dr Thudichum believed that it is frequently not borne because it is not sufficiently diluted. The more it is diluted, the quicker it is assimilated, and the more certain are its effects.

It might appear paradoxical that a free acid should travel through the blood, and act upon certain parts through tissues. We are, nevertheless, obliged to admit the possibility of that occurrence. Thus oxalic acid and many other acids have been proved to have passed through the blood uncombined, and have been found in the urine in a free state. Even allowing that blood so mixed with nitric acid might show a precipitate, there is no reason why a molecular precipitate in the blood, which is full of molecules of its own, should not again dissolve.

All liver diseases require the greatest attention to the intestinal canal. Mild purgatives, of salts, or fruit, Pullna water, Seidlitz powders, water containing one per cent. of ordinary chloride of sodium and a little sulphate, are the best remedies. If stronger purgatives are required, the vegetable ones deserve preference. The fatal error of treating with mercurials the various disorders of the liver, he could not sufficiently deprecate.

The diet should be juicy, include fruit and vegetables, and eggs and meat. Starch and fat are always badly digested.

The skin must be well attended to. Baths, with some aqua regia, stimulate the skin and open the epidermis.

In true bilious attacks, with indigestion, a furred, sometimes yellow tongue, constipation, sickness and vomiting, headache, yellow appearance of face, and albuginea, he had found the use of blue pills mostly hurtful. Whenever he had been called upon to treat such an attack, his treatment had to deal with the effects of the biliosity and blue pills combined. In cases where such attacks, without previous excesses, become habitual, gall-stones are not rarely developed. I have known two cases end in phthisis. One, that of a gentleman, married, about forty years of age, is yet under observation. In many cases of phthisis, in which gall-stones are found after death, this habitual biliosity did not rarely precede the disease of the lungs. But phthisis may also produce gall-stone disease.

Lastly, he adverted to the use of soluble phosphates. He had made the observation that bile contains no small amount of phosphate of soda. Without this salt, the assimilation of the fats must needs be imperfect. Considering, therefore, that the absence of the phosphate may be hurtful, and that its presence never has been found to be so, he was inclined to give it a further trial. It should be given in the food, together with chloride of sodium, or in a dilute solution in water. Since he exhibited before this Society the action of phosphates upon fatty acids, with which they produce an emulsion ready for transition into the blood, he had thought of combining the acids of cod-oil with phosphates, in order to make this substance more generally digestible.

Liebig has long since shown that the most pleasant manner of giving soluble phosphates consists in the administration of beef-tea; but where this extract cannot be had in a quite reliable form, a weighed quantity of the ordinary phosphate of

soda, say to the amount of half-a-drachm or a drachm per day, or more where it is liked and well borne, is preferable.

In bile, soda preponderates over potassa. In the substance of the liver, the proportions are reversed. The relations of these two bases require further study. It is not probable that the one may substitute the other, and *vice versâ;* and hence the want of potassa may become a source of disease. It is known that this base prevails in the muscles, soda in the blood.

By thus attacking the liver from all sides, we shall soon succeed in obtaining a surrender of its secrets. This organ can in this way only be stimulated, while it is out of the reach of so-called medicinal stimulants. Torpid liver, sluggish liver, and the like, may be useful practical denominations; but they are not based upon any positive evidence. We want much less cholagogues than we require remedies to appease, subdue, and change the activity of the liver. The organ is accused of much of which it is not guilty. It is by the mouth that most diseases enter; and it is from the insults received from the direction of the intestinal cavity that this patient and enduring organ mostly derives it detriment.

A discussion of some length ensued, in which several Fellows of the Society took part. It had reference, however, chiefly to the elucidation of certain points in the paper, and did not afford material for a report.

Monday, October 15th, 1860.

Dr Richardson read a paper

On the Physiological and Therapeutical Properties of the Peroxide of Hydrogen.

This substance, which was discovered by Thénard in 1818, is, in fact, water charged with oxygen in the active state. In his paper, Dr Richardson took up the following points:—The history of the substance; its preparation, with special regard to pharmaceutical applications; its physical and chemical properties: its relations to ozone; its physiological properties; its thereapeutical value.

It was obvious from the author's description that some obstacles lie in the way of the application of the peroxide of hydrogen for medicinal purposes, owing to the difficulty experienced in its manufacture. This difficulty, however, Dr Richardson greatly simplified; and we should infer that any experienced pharmaceutist could supply the medicine after a short acquaintance with the process of making it, as readily as quinine or other remedial bodies in preparing which time and care are the most important requisites. It was shown, indeed, that if perfectly pure peroxide of barium were supplied to the profession, every practitioner in the country could make his own solution of oxygen as he might want it.

The description of the chemical and physical properties of peroxide of hydrogen was unusually interesting. Passing over the facts relating to the influence of inorganic bodies upon it, those bearing on organic matter strike one most forcibly. Thus, blood freed from fibrine absorbs the oxygen from the peroxide, and, if it is venous blood, it becomes arterial, with a rise in the temperature. Washed fibrine and cellular tissue in the fresh state evolve the oxygen. Albumen, urea, gelatine, fibrous membrane, and skin, produce no change. Grape sugar, and, indeed, all the sugars brought into contact with it, become decomposed, and evolve carbonic acid. Starch undergoes the same modification.

These observations refer to animal substances recently used; but when putrefaction has commenced, then the oxygen of the peroxide seems to act on all, alike, and to produce rapid disintegration.

Another curious fact relating to the peroxide was, that its oxidizing power was easily prevented by the presence of certain bodies having a wide extension of names, but analogous characters. Ammonia in vapour or solution, tobacco, hydrocyanic acid, solution of aconite, and, in short, all the narcotics that are miscible with water, possess this neutralizing property; the permanency of the result being decided by the physical character of the agent employed.

The section of the paper on the relations of the peroxide of hydrogen to ozone was an interesting one, and indicated a careful study of this debated question. It is clear that Dr Richardson looks upon the two bodies as one and the same. If he has any doubt, it is to the effect that in peroxide of hydrogen there is not any affinity at all between the two elements, hydrogen and oxygen. We pass the matter over to dwell on the physiological actions of the peroxide. These seemed to arrange themselves into the following brief propositions:—A weak solution oxidizes blood; but this effect can be stopped by the actions of the alkaloid and of narcotics. The peroxide supports the life of fishes; but the body of the animal causes rapid evolution of the gas. The solution injected into the left side of the heart of an animal restores the irritability, but appears to have an opposite effect on the right side. Injected into the arterial system immediately after death, it seems to restore to the muscles the power of contracting on the application of an irritant. It suspends to a considerable extent post-mortem rigidity, and it reduces spasmodic action, excited by such bodies as ammonia and hydrocyanic acid. On the therapeutical value of this powerful agent, Dr Richardson did not dwell long; but reserved this essential point for another communication. He showed, however, that as an antidote to the alkaloidal poisons, as an external application to decomposing sores, as an internal remedy in fever, where the patient literally dies from deficient oxygen, and in diabetes, the medicine might be used with the very best promises of success. In the way of a pleasant acid drink, one could give, said Dr Richardson, to the typhus-stricken man 100 cubic inches of active oxygen per hour. In diabetes, one fact had been made out also by the author, that, under the influence of the peroxide, the quantity of sugar at once became less, and the excretion of urine decreased in a relative degree. After illustrating his paper by experiment, Dr Richardson concluded by stating that, in placing it on the annals of the Society, he would guard himself, once and for all, from any exaggerated suggestions as to the value of this new remedial agent. The subject, indeed, was so novel, that after twelve months' study of it he had feared to use a sentence that had not been considered over and over again. He did not pretend to know all the properties of the peroxide. He did not bind himself inviolably to any opinion offered on the present occasion; nay, experience might show that the substance discussed in a medicinal sense took new and even different directions from those with which he had opened the argument. His own intentions and objects would be served if he did but call forth investigation and fact, let the course of events bend in whatever way they might.

Dr Thudichum expressed an opinion that the peroxide of hydrogen, as made by Thénard's process, could not be altogether freed from chlorine; and suggested that the substance should be made by the simple sulphuric acid process. He also dwelt on the fermentation theory in relation to certain of the effects of the peroxide. He expressed a disbelief as to the existence of "ozone."

Dr Lankester asked Dr Richardson whether oxygen, as it was liberated from the solution, was in the active state; and Dr Richardson having answered in the negative, Dr Lankester proceeded to defend the ozone theory. He believed with the author of the proposition to use the peroxide of hydrogen as a medicine, that great therapeutical effects would come from it. He suggested experiments to determine whether the amount of excreted matters—such as urea and carbonic acid—would be influenced by the administration. It was a remarkable fact, that so powerful a substance should so long have remained uninvestigated as a medicinal agent.

Dr Garrod compared the chemical effects of the peroxide of hydrogen with the effects of the permanganates. He had tried the permanganates in diabetes; but he thought with the effect only of increasing the amount of sugar. He would wish to hear whether the physiological effects of the peroxide and of a permanganate were the same. It might be that the saline character of the latter produced a difference.

Dr Richardson, in reply, said that in regard to the presence of a trace of chlorine in the solution, it made no difference; for the effects of chlorine-water were very analogous, and it might turn out ultimately that a direct relationship could be

traced between chlorine and oxygen. Thus, water boiled free of oxygen, and charged very feebly with chlorine, would, as he should show on another occasion, support the life of a fish longer than the water altogether destitute of oxygen. In respect to ozone, he had no doubt that such a substance existed, and he was inclined to think that it was a modification of oxygen. He thought that in testing the effects of the peroxide of hydrogen, it were best to try it in disease without any further intermediation, selecting for its trial extreme diseases, such as were not at this time amenable to treatment. The actions, *physiologically*, of the peroxide of hydrogen and of the permanganates were entirely different: the latter injected into the veins of a horse produced permanent fluidity of blood, and transformed the blood on the arterial side to the venous colour. The difference depended on the fact that in the permanganate the oxygen was combined, while in the peroxide it might be considered as virtually free.

Dr Garrod, Dr Radcliffe, and several other Fellows, observed that they should be anxious to give the peroxide a fair trial as to its thereapeutical value; and inquiry was made as to the means of obtaining the solution."[1]

PERISCOPE.

NOTES ON LAMENESS IN THE HORSE.

By Joseph Gamgee, New Veterinary College, Edinburgh.

Reprinted from "The Field." Revised by the Author.

I. The subject of lameness in horses is one of so much importance, affecting the safety, comfort, and interests of so large a section of the public, that I shall dispense with apology for drawing attention to it in your columns. It is of so common occurrence, varying in cause, locality, and character (for lameness is but a symptom), that I purpose for the present limiting my inquiry to those cases in which the fore-feet and legs are involved, comprising as they do by far the greater number of all cases of lameness in the horse, and are those, moreover, most easily prevented and cured, being produced by causes possible of avoidance.

The word lameness, as applied to the horse, seems to have lost some of its force of meaning, since the very commonness of the affection reconciles people to it. When the word is applied to a man or a dog it conveys the impression that the individual or animal is suffering pain; when applied to a horse usually it seems to convey no such impression. The horse cannot give utterance, neither does he wince; but his withered countenance indicates as much agony as the language of man can express. Lameness exists in horses in indefinite variety as to degree—from that of intensely acute suffering, to one in which the altered action of the animal is not at once and by all seen. Hence, different terms are used to express modifications in the intensity of affliction. We sometimes hear that a horse goes a little short and stiff, or that he trips or stumbles. Among racing men we are informed that a horse has lost his form of going—that his speed has left him, &c. All these vague terms, and the notions prevailing respecting them, tend to perpetuate the mysterious ignorance in which the whole subject has hitherto been enveloped. As a general rule, the fore-legs of horses do not give way until after the feet have suffered from the effects of shoeing. We invite the inquiry of owners of race-horses and hunters under their care to this.

Let Mr John Scott, and other trainers, recall to memory the valuable horses

[1] The peroxide of hydrogen may be obtained of Bullock, Princes Street, and of Perrins & Barnitt, Conduit Street, London.

that have failed in their legs; and they will, I believe, find that before these horses broke down there were signs of discomfort in one or both feet—they were not going at the time with the elastic, bounding action that characterizes the free gallop of a sound horse. So soon as the due proportion of the different parts of the horse's foot one to another, and the relative connection with limb, are destroyed by shoeing, uneasiness is produced, which in degree depends on the kind and amount of exertion the animal is made to undergo, and consequent injury. As a consequence, not only the parts within the hoof, but ligaments, tendons, and bones suffer—the whole limb, in a word, becomes disturbed.

I do not feel it expedient now to go into details on what I conceive to be the fundamental facts, a knowledge of which should guide one in the art of shoeing; I call attention to the manner in which horses with perfect legs may, and often are, injured from the first time of shoeing—not through wilful neglect, not for the lack of manual dexterity, but from the want of an *instructed* hand. A perfect horse, when at ease, stands in a condition which the French have denominated *l'aplomb;* this is special to every horse. In English there is no word in use technically which conveys the same meaning.

Comparing the blood-horse with the powerful Clydesdale, a great difference is observed in the position of their limbs, and in the relative obliquity of their pasterns; but either is admirably adapted for a special purpose, viz., fleetness and great elasticity in the one instance, firmness and solidity for draught in the other. The natural direction of the limbs of a horse standing on a level surface, when the feet bear fairly and firmly on the ground, is what the French term *l'aplomb*, and which must be attended to by those who, in modifying the shape of the hoof, and applying a shoe, can either preserve or destroy the normal state I am alluding to. The rules which should guide us in this take from the art of shoeing horses the nature and character of a mere handicraft. The limbs and feet of horses are like men's hands and faces—no two alike. The mere smith-work alone necessarily forms a small part of that which is required in successfully practising the art of shoeing horses. Blame cannot be attached to working farriers, who, as a class, have laboured hard, and who have always been ready to profit by sound instruction, but whose labours unfortunately have been conducted without the light of science to aid them. No Watt or Stephenson has in this country cheered the working farrier's path. Men cannot make progress in an art if they work in the dark. Nothing short of a mental and manual training in the art of shoeing can possibly lead to the successful practice of it.

We often have read and heard that bad workmen make and prepare the shoe, and then adapt the foot to it, instead of doing the reverse. The conclusion drawn from this is, that as the foot is Nature's work, all that the workman has to do is to be guided by it in making and fitting the shoe. This is but partly true, as the feet of horses which have just come from the small paddock, fold-yard, or loose-box, are not usually in a state of *nature*—nature in the full sense of the term, as I understand it. The feet require some preparation, that is to say, to be put into the form which, with freedom in the natural state, they would have preserved.

In a state of nature, hill and dale alternately, and in due season, are the horse's resort, so that the foot is kept in its normal condition, which is not the case in our small fields and fold-yards. Still greater deviations from the natural form are found in horses long exposed to hard work and defective shoeing.

II. Professor Rey, in his Treatise on Farriery (page 7), quotes the following passage from an essay by Bourgelat, the founder of veterinary science:—

"The little progress that has been made in the knowledge of this department has kept it in a state of debasement which exerts influence over the other branches. The man exercising the art has been looked upon as a mechanic whose business it is to work iron; without glancing any further, both the artist and his work have been equally overlooked, because the majority of men are possessed of foolish vanity, and disdain the work of the hands, how useful soever it may be—in other words, they scorn the man who, making use of the instruments which

Nature has granted us expressly that we may supply our wants, and by our industry consecrate them to the use and benefit of the community at large."

It is encouraging to a man, who perceives a want in a department of knowledge, to know that he is not alone, that other men have, to a great extent, led the way. It is to show those who think with me, and who may be induced to work in the same field, that I have placed at the head of this paper the words of the man, who, a century ago, seeing the uncultivated state of veterinary medicine, left the profession of the law, and adopted for the work of his future life the great task of founding a new science and art—viz., the veterinary science and practice as now understood, embracing a knowledge of hygiene and the treatment of the diseases of the domestic animals. Such was the conception and broad comprehensive plan of Bourgelat, that the success attending his labours has never been surpassed in the annals of veterinary medicine. The founder of two great schools—the first at Lyons, and the second at Alfort, near Paris—whence spread the knowledge, and whence issued the founders of other veterinary schools since established over the civilized word, Bourgelat stands in relation to veterinary science (not of France alone, but of the world) as its founder—as the Columbus who opened the way; and so well did he do it, that the schools he founded in France have always stood at the head of this most useful branch of knowledge. To the art of shoeing horses the former advocate specially applied himself, and his well-disciplined mind worked out rules with an exactness which have borne fruits of incalculable value.

All Bourgelat's rules on the art of farriery have stood the test of time, become the practice in France, and to a great extent over Europe. Every one acquainted with the subject, or who has given much attention to it, knows that what is called French shoeing is, as regards principle of application to the horse's foot, universal, not throughout France alone, but in a measure in adjacent countries. From the small fishing-town on the channel coast to Marseilles, from Bordeaux to Strasbourg, the same theory guides the workman, the same success attends the practice: we see the work of the mind carried out admirably in the art. All are agreed on the soundness of the procedure, success has long reconciled all parties, and the theory has become part and parcel of every workman's education, so that the veterinarian has no difficulty in directing the farrier, who in all cases deviating from the normal state, and where extended knowledge on the subject is required, is capable of carrying out intelligently the veterinarian's directions. I cannot draw the contrast so effectually by any words of my own as by quoting from the late Professor Sewell the words I have frequently heard him utter. (I am not aware whether or where they are to be found in print). On his return from a Continental tour of inspection of veterinary schools, he said, "that he had seen more lame horses whilst posting from Harwich to London than during his whole journey over France, Switzerland, and Germany."

Another argument frequently used by the same professor, after long experience, and whilst in the prime of life, I have frequently heard him utter, was, "We need no better proof that in this country the practice of shoeing is an untaught branch of the veterinary art, than that every one has a plan of his own, whilst in France they acknowledge one principle in practice throughout the land."

In England we are in the habit of taking credit for being improvers of all importations of knowledge beside the original which we contribute to the common stock. Besides being foremost in the arts of civilization, England's resources have led to the working out of many schemes which have not originated with us. We have, however, led the way in the use of the steam-engine, in the use of gas-light, in free trade, in the great improvements in the postal department, and other numerous advances of modern civilization; these, although excellent in themselves, afford no reason for neglecting reforms in other matters. It is often urged that in all that concerns the cultivation of our domestic animals we are in advance of the rest of the world. Admitting, as I do, the truth of this statement, there are still many defects which require to be remedied.

That we are in advance of some other countries in the art of agriculture can-

not be set forth as a cause why Liebig's science should not be availed of by us. I believe it to be true that Great Britain stands before all the countries of Europe in the high cultivation of her breeds of cattle. But there are causes specially favourable to those advantages possessed by the British people. Our climate and soil, and our innate love for animals, not only for those which contribute to health-creating sports, viz., the horse and dog, but for those which constitute farm stock in general, tend to cultivate and improve the breed of our domestic animals. These combined influences constitute the source of the superiority of the English horse, but that superiority dates antecedent to our veterinary schools, and is wholly independent of them. The class of horses in which this superiority is most clearly proved is the blood-horse, and before veterinary schools were founded, whilst the art was low, and the science unknown among those who treated diseased horses, our Eclipses and Flying Childers existed. It is not in depreciation of the profession of which I am a member that I cite these examples, but to disarm those who often advance the fact of our superiority in horses as a proof that all that ministers to their necessities is as perfect as is required; as well might our farmers have declined to profit by the teaching of Continental agricultural chemists, because of their real or supposed superiority over other countries in the arts of agriculture. To none will I give way in devotion to the profession and ardent wish for its extended usefulness and prosperity. It is the conviction that much is required, and that little has been done for the advancement of the profession as a body, that leads me to draw attention to the imperfections most obvious to myself. For thus digressing I can only beg to be excused, from the deep sense I have of the necessity of clearing the way for future progress. In veterinary science generally, and the art of farriery in particular, the English (I will not say people, but veterinary schools), have not profited by the free intercourse available with their neighbours. Most other arts and sciences have been benefited by mutual intercourse and good friendship between different nations. See how our machinery and improvements on the steam engine have been adopted throughout the world; and how, on the other hand, Manchester has availed itself of the designs and improvements in the arts of Lyons, and *vice versâ*.

The veterinary art, unfortunately for the profession and the public, has been, and is, an exception. After the close of the great war, and after Assistant-Professor Sewell's report on the superiority of the principle of shoeing horses on the Continent, (and many officers of our army and travellers had borne testimony to the same fact), Mr Coleman, the principal professor of the only veterinary school in Great Britain, occupied himself, not in acquiring and diffusing truth, but in explaining it away. A native of Kent, he spent the summer months there, but did not cross the channel; he always told his class that he had heard people extol the principle of French shoeing, urging that they did not find in French horses corns, sand-cracks, navicular disease (just discovered and made clear by that first in the rank of contributors to veterinary science, James Turner). To all these Mr Coleman had ready answers, viz., "that the French drove their horses slowly—that their roads were paved and not macadamized;" though strange that he should not have seen that London was all paved at that time, whilst lame horses abounded in it: that the French horses were of a heavy breed and construction not easily susceptible of the same diseases as our English horses; further, that they were less artificially treated than our horses. All causes but the real were urged by Mr Coleman. He did, however, confess one good in continental shoeing, viz., that they stamped their nail-holes better than we did; but as he was giving an account of what he had never seen, exaggeration and inaccuracy was the consequence. Mr Coleman was always plausible, and commanded the attention of his students; but it was when attacking a system, or the works of Messrs Moorcroft and Bracy Clark, that he became eloquent, or, to use the words of Sir Charles Bell, his "language was poetical, but not philosophical."

(To be continued.)

THERMO-THERAPEIA (THE HEAT-CURE);

OR, THE TREATMENT OF DISEASE BY IMMERSION OF THE BODY IN HEATED AIR.

By Erasmus Wilson, F.R.S.

(*From the British Medical Journal*, Oct. 13, 1860.)

For a knowledge of thermo-therapeia, medical science is indebted to Mr Urquhart.

Thermo-therapeia is the application of atmospheric air at a high temperature to the surface of the body, for the relief of pain and disease. The poets use the expression, "bathed in light;" if we adopt the same language in reference to air, we may style the process a bathing in hot air or a hot air bath; but in no other sense does the term "bath" apply to its use.

Mr Urquhart became acquainted with the construction and uses of the thermæ in the course of his travels in various parts of the world, and found it almost universal in cold and temperate climates, but absent in the tropics. By the people among whom it is found, the thermæ is employed as a luxury and a religion, the religion of physical purity, but not as a remedy against disease; it was left to Mr Urquhart to apply highly heated air as a medicine for the relief of pain and disease, and with the most signal benefit.

The capacity of the human body for bearing dry air at a very high temperature is a matter of common observation; we see it in the daily occupations of copper-smelters, steel-pourers, the stokers of steam-engines and gas-ovens, of glass-blowers, porcelain-burners, and in a variety of manufactures and trades. And in a well ventilated thermæ, a temperature of 130° and thence upwards to the temperature of, and above boiling water, is not only bearable but absolutely soothing and agreeable.

If we inquire into the medical history of the men employed in the fiery occupations to which I have just referred, we shall find that they enjoy a state of health and longevity above the average of other men. Look upon them and you perceive them to be strong, well built, muscular men, with that exact proportion of integument and muscle which denotes the nearest approach to the standard of manly beauty and health. The perspiration is streaming over the surface of their naked skin; they aliment the flowing tide, from time to time, with deep draughts of cold water or thin gruel; they frequently pursue their labours in open sheds exposed to a thorough draught of cold air; or, after enduring extreme heat for awhile, they emerge from the atmosphere of the furnace into the open air, naked as they were born, to cool their bodies in the refreshing breath of a north or an east wind. Our over-clothed and pampered skin creeps and shivers in sympathy with the seeming risk and danger of their exposure. But ask these men if they ever take cold, and they will tell you that they do not know the meaning of the word.

Our every-day observation, therefore, teaches us that the human body can bear and labour in high temperatures, not only without inconvenience or distress, not only without the danger of chill from subsequent exposure to cold air; but, on the contrary, with an increase of health, of strength and of condition; in other words, that the body derives from this process those special advantages of condition and power of endurance which are commonly sought for in the process of "training;" in truth, are acquired in no other way than by a systematic training. What a race, marvellous for power and strength and endurance, might not Britons become, exclaimed Mr Urquhart on a recent occasion, if this kind of training were universal; if the thermæ were to become an institution of common life.

The capabilities of the thermæ for the purposes of training have already been recognised and applied. The readers of the *Field* are prepared to see the barbarous, the injurious, the exhausting process of training by the old method entirely discarded, and to behold the simpler, more natural, and more perfect operations of the thermæ take its place. Not only is the thermal process of training the

most advantageous for human beings, but it is also applicable, and has been applied with the most successful results, to animals.

I will endeavour to retrace my own experience, on my first introduction to the thermæ, now, some time back. It was the winter time, the season bitterly cold; my inception as a "companion of the bath," took place in the private thermæ of my esteemed friend Mr George Witt, of Princes Terrace, Hyde Park. As an example of simplicity of construction, Mr Witt's thermæ may be usefully taken as an illustration. He had at the back of his house, a room twenty feet long by ten feet in breadth and twelve feet high, with a window looking out upon a lead-flat such as is common in London houses. To convert this room into a thermæ he divided it into two compartments by means of a wall which crossed it at about one third from its further end. He had, thus, two apartments, an outer one, the cooling room or *frigidarium* of the Roman thermae; and, an inner one, entered by two small doors (inner and outer) in the partition wall, the *caldarium*, *calidarium* or *sudatorium*. To secure the detention of heat in the calidarium, a lath and plaster lining was placed inside and at the distance of a few inches from the wall, and the space filled in with sawdust, and the floor was paved with earthen tiles bedded on concrete. Outside the room, on the lead-flat, an opening was cut through the wall for the construction of a common furnace; the furnace encased with brickwork entered the calidarium, and its flue was carried around the apartment close to the floor. Having completed the circuit of the room it was made to ascend a few feet, then carried transversely across the end of the room above the furnace, and subsequently permitted to escape at the corner of the ceiling into an outside chimney. The entire length of the flue was thirty-five feet, and as it was propped from the floor by means of a brick placed at short distances and a space left between it and the wall, the whole of its external surface was free to radiate its heat in all directions and communicate its temperature to the air of the apartment. A thick plate of glass let into the outside wall gave light to the room, and four holes, two below, and two above, piercing the wall and furnished with the moveable plugs, afferded sufficient ventilation. Add to this description a wooden seat supported on the flue; a platform, which afforded additional sitting room over the masonry of the furnace; and a wooden couch, the *duretum* of the Romans, and the calidarium is complete.

Having left my garments in a portion of the outer apartment which served as a *vestiarium*, and girt around the loins with a *cummerbund*, the kilt of oriental nations, I entered the calidarium: the temperature was delicious, such a contrast with the exterior world. The wind and snow were raging without, while here was a paradise of 135 degrees of Fahrenheit. Within this hallowed nook anxiety and care and fatigue, like the burden of Bunyan's Christian, seemed to fall from my shoulders; I stretched forth my limbs in peace and enjoyment; the brain seemed to think more lightly and pleasantly and my ideas flowed brightly and calmly. I longed to compare my sensations with those around me, for I was not alone; that day I was the seventh or ninth "companion of the bath," I scarcely remember which; but I called to mind that the greatest wisdom often lies in silence, and I yielded the pleasure of speaking for the greater pleasure of listening.

My friend, Mr Witt, in the course of a few minutes was streaming with perspiration which ran down his face in rills and dripped from his elbows and finger-ends in continuous drops, while my skin was as yet dry. He explained to me that this facility of perspiration distinguished the practised bather from the unpractised, the educated from the uneducated skin; and he reminded me by that remark, how little opportunity the skin has, in this climate, of performing its normal function thoroughly and therefore healthily, and that the function of the skin in the majority of the inhabitants of this island is a dormant function and its purpose as an emunctory to the system almost entirely undeveloped.

I was struck also with the rich and healthy complexion of his skin; it took its hues from the free circulation of the pure arterial stream through the capillary plexus of the derma; as he drew his fingers forcibly across his chest, the white traces left by their pressure were instantly replaced by the glowing vermilion of the arterial flood. There were no gorged capillaries in that skin; no venous trans-

formation in that cutaneous plexus; no deposits of unhealthy colouring matter either in the cuticle or in the tissues beneath; no pallor; no excess and no deficiency of fat; no choked pores; no wrinkles from loss of elasticity and contractility of the fibrous and muscular structures of the corium; no abnormal or deficient sensibility of the nerves; all was, as nature made it, perfect and beautiful. I looked for the first time in my life on a really healthy skin.

How very curious and striking was the difference between my friend's skin and that of every one present: one gentleman, a finely-built handsome man, with a remarkably-capacious chest, had too great a preponderance of adipose tissue, while the hue of the skin in an oblique light was a bright golden yellow. In another, the muddy tinge of the skin discovered the impure and muddy condition of the blood. The habitual use of the thermæ removes these discolorations, these indications of imperfect elimination, by drainage through the perspiratory system, and while it gives beauty to the skin, bestows health on the entire economy.

Seeing the perspiration flowing in such wonderful abundance from my friend's skin, and observing that he encouraged its quantity by taking frequent draughts of cold water; and led into the same channel of thought by the state of my own skin which was now perspiring actively, I ventured to remark that we were literally supplying the means of washing the body from our inward selves. "It has always been a theme of wonder, in the exploration of the thermæ of the Romans, as also in the examination of the writings of different translators and commentators," replied my friend, "how the Romans could have obtained a quantity of water sufficient to supply all their baths and the vast numbers of bathers who availed themselves of their use; but, it is evident, as you see, that a very small quantity of water for each person to rinse the body, after ablution in its own perspiration, would be all that is needful."

Another inference from these remarks is self-evident, but not the less important. Among our various medical remedies for procuring diaphoresis, a list which embraces antimony, guaicum and ipecacuanha, hot air must take a prominent place. But how different its mode of action! If we ourselves were the subjects of treatment, how infinitely more agreeable should we find it, to convey ourselves bodily into the pleasant and agreeable temperature of the calidarium, than to consign the above nauseating medicines to our stomach. Moreover, the latter may fail; the former cannot fail. The former we can regulate to a nicety; we can procure as much perspiration as we will, we can suspend it when we will; but the antimonial may not do its duty sufficiently, while we dare not give more. The antimonial may be hours before it responds, may need encouragement, assistance; the calidarium breaks down all restraints in a few minutes and needs no second help.

After a free perspiration of half-an-hour's duration I was anointed with soap and had a rub down with a wisp of white fibre called *lyf*, the fibre of one of the palm trees commonly used in the east for the purpose to which it was now being applied. To the friction with soap succeeded a shower of warm water, then a douche of cold water, after which I was made to sit still for some minutes until the warmth of the skin was restored. In Mr Witt's thermæ the ablutory process is performed in the calidarium, but where space permits, a closet or small apartment is devoted to the purpose and constitutes the *lavatorium*. Not unfrequently, the lavatorium is warmed by a part of the flue of the calidarium and then performs the double office of lavatorium and *tepidarium*. Where a proper tepidarium, having a temperature of 98° exists, it supplies an atmosphere which is intermediate in warmth between the frigidarium and calidarium, and serves as a transition between the two; preparing the skin, by a gentle warmth, before its exposure to the higher temperature on the one hand, and mitigating the extreme of depression of temperature, on quitting the calidarium, on the other.

To invalids, the transitional temperarure of the tepidarium is of importance, and suggests one of the precautions necessary to be taken in employing the thermæ as a medicine for the treatment of disease; but where the thermæ is used for the purposes of cleanliness, maintenance of existing health, training, or luxury, then the absence of the tepidarium is of little consequence.

From the calidarium I passed therefore to the frigidarium, on this occasion, mid-winter, and a piercingly cold snowy day, truly deserving its name. I was then *cloaked* in a sheet taken from one of the pigeon-holes of the *columbarium* standing in the corner of the room, my *cummerbund* was allowed to drop on the floor, and I was made to recline upon a cane couch immediately under the open window. How cool and pleasant were the puffs of wind that played over my face and limbs: how different their impression on my skin to what they had been an hour before. I needed not the assurance of my friend that there was no fear of catarrh or bronchitis; my own feelings told me that I could resist any amount of cold, and I was obliged to suppress a longing to walk out upon the leads with no other covering than my sheet, into the midst of the sleet and wind; had the lead-flat been a terrace or a lawn I could not have resisted the temptation.

To a person prone to take cold on exposure to slight draughts of air, this instinct of defiance of cold seemed very strange—one of the phenomena of the thermæ. I was reminded how the inhabitants of countries colder than Great Britain, for example, Tierra del Fuego, go about naked; and I also called to remembrance that our forefathers of England and Ireland, as well as the "naked savages" of Scotland, were equally without covering. The climate is still the same; the difference between the people of those times and these is therefore clearly nothing more than one of habit. The face, which is always uncovered and exposed to every alternation of temperature, still represents our original state of nakedness and endurance, but the rest of the body is swathed in the close folds of a heating clothing and remains for ever etiolated and unnaturally sensitive to painful impressions, while its appreciation of agreeable impressions is proportionately destroyed. I lately saw a child, four years and a-half old, who had been brought up in the constant use of the thermæ and who had never worn clothes. He is a sturdy, healthy little fellow, graceful in his figure and movements, and has the independence of deportment of an Indian chieftain. Blows and outward injuries do not affect him painfully as they would other children; and being met one day playing naked in the snow he was asked whether he was cold: "Cold?" said the boy, touching with his finger his chest and cheek, "*Yes, I think I am cold.*" It required that he should pass his finger over his body as he would have done over a marble statue to become aware that the surface of his skin was, in external sensation, cold.

"How is it," inquired the Rev. David Laing, "that in my visits among the very poor, I so rarely meet with consumption or serious consequences resulting from exposure to cold." I could not answer that question then, but *now* I should have no hesitation in replying that the exposure of the poor to cold air gave endurance to their skin and enabled them to resist the influence and the effects of cold. "In my early life," said Miss Jane Porter, one day when we were conversing on a kindred subject, "in my early life I was extremely sensitive to the impression of cold; if any part of my skin, however small, beyond the limits of my face, were exposed only for a few minutes to a draught of cold air, I was immediately seized with catarrh. I longed that my skin should become *all face*, for then it would have had the power to resist the cold." How suggestive these observations are when they are ranged side by side with the remarkable phenomena which are presented to us in following out the operations of the thermæ.

After awhile I exchanged the horizontal position on the couch by the open window, to a sitting posture; the sheet was thrown off from my back and limbs; the moisture of the surface was dried up, no wiping, excepting of the head and face, was practised or required, the skin felt smooth and warm, and I was permitted to dress, but with the injunction that I was to dress leisurely, lest the perspiration, which had ceased, should again be excited. It is worthy of notice, that great attention is paid to the temperature of the skin during the curriculum of the thermæ; after the cold douche, we return to the calidarium to recover any waste of heat; and in the after cooling of the body in the frigidarium, the whole of the moisture must be dried off the skin, and perspiration must be wholly suppressed, as indicated by a peculiar smoothness and polish of the surface, before we are qualified to resume our dress. All clamminess of the skin must have ceased entirely before we resort again to our usual coverings.

Sometimes the flue of the furnace, instead of being admitted into the calidarium, as in Mr Witt's thermæ, is made to travel under the pavement of the room, making a series of traverses from side to side and representing the *hypocaustum* of the Romans. In this arrangement, the floor is frequently excessively hot, too hot to be trodden by naked feet, and the use of wooden shoes becomes necessary. The thermæ of Mr Stewart Erskine Rolland, one of our highest authorities on the Bath after Mr Urquhart, is constructed in this manner. I had recently the gratification of testing the merits of Mr Rolland's thermæ; the temperature was 160°; the air, being perfectly dry, did not feel otherwise than pleasantly warm; the wooden couches, arranged around the room and covered with soft Turkish sheets, afforded most agreeable reclining and lounging places, and upon these we stretched ourselves at ease while the perspiration burst forth from its seven millions of pores. I then went into a small closet, wherein the temperature was ten degrees higher, the sensible heat being very much increased above that point by the introduction of vapour; and from the hot closet I stepped into the lavatorium, and, after inunction with soap, was greeted with a douche of alternate hot and cold water for the space of some minutes. The sensation of this alternate douche is beyond everything delicious.

Mr Rolland, like Mr Urquhart, is an Eastern traveller; his frigidarium is a divan furnished with reclining couches of the most approved oriental character; door and windows were open, to gain as strong a current of air as possible; and here, in the most graceful, because the most natural attitudes of quiescent repose, we sip our sherbet, and cool our glowing limbs. Struggler in the sun and dust of hot July, how you envy our enjoyment! Toiler in the mud, the slush, the biting winds and blinding sleet of the wintry world without, what would you not give to change places with us!

But quitting the construction and appliances of the thermæ, the mechanical means, let us inquire, firstly: What are its physiological properties? secondly, what are its medical properties? With its psychological and moral properties we have at present nothing to do; albeit it would not call for much argument to prove that both are elevated and exalted. All agree that the brain never works more pleasantly than in the thermæ; the mind seems cleared of its physical impurities; the godhood of our nature is elicited by the body's purity.

Physiologically we find that a grateful feeling of warmth pervades the entire skin, whatever its previous condition of temperature, of dryness, or moisture; secondly, the skin appears to soften, to become ductile and pliant; thirdly, minute drops of water, gradually becoming larger, stand upon the skin like crystal beads. "I shall tell my friends," said a gentleman to a 'companion of the bath,' a doctor of divinity, who was noting this phenomenon, "that I beheld a clergyman of the Church of England, while sitting in the thermæ, piously counting his beads." And soon, these limped beads, swollen beyond their bound, trickle downwards to the earth. The skin, likewise, loses its accustomed paleness, and becomes more or less reddened; it is clear that the blood is sent more actively to the surface and in larger quantities. The skin of the face and hands is more suffused than the rest of the body and the conjunctivæ are also reddened.

It is evident that the high temperature of the atmosphere of the thermæ is a stimulant of the circulation, of the heart's action in fact; the pulse becomes frequent, and after a time the heart also is felt to be quickened; sometimes a sense of oppression, of giddiness, of faintness, and sometimes, though rarely, of sickness occurs, and the novitiate is constrained to seek the fresh air of the frigidarium. These effects of the thermæ are perfectly natural, perfectly physiological, are exactly what would be predicted by any physiologist to whom the problem were submitted: What would be the effect upon the animal system of an excessively heated temperature? His ready answer would be; the pulse will be accelerated, the heart's action rapid, and according to the degree of temperature or the constitutional susceptibility of the individual, there will be more or less distress of the nervous system. But the same answer applies to a heated state of the body, however induced, whether by extreme heat, as in the Indian camp, during the

late campaign, where the thermometer in the tents often reached 140° degrees of Fahrenheit; whether in a sultry day in our own climate; whether in hot rooms; under hot bedclothes; from active exercise; or from the use of diaphoretic medicines.

These remarks are intended to show that the thermæ is not to be trifled with; it is a medicine, a great and a powerful medicine; and can only be applied with safety and advantage by those whose vocation it is to study the physiology of man and to treat his diseases. In the judicious hands of the essentially practical medical man of Britain I look to see thermo-therapeia occupy a useful and a dignified place; and I trust that in a short time, in every small village and hamlet in England, wherever a medical man is found, there also will be found a British thermæ. The medical man will be too happy to make himself the subject of his first experiments, to apprentice himself to an art wherein all is enjoyment; to learn by his own impressions, how far he may push the remedy in the treatment of his patient, and how often he may apply it. In his own person he will reap a rich reward; after the cares and anxieties of the day, his thermæ will give him rest and renewed life; his moral atmosphere will be brightened, his spirits revived, his power and usefulness enhanced.

It is one of the first, as it is an hourly matter of duty to the medical man, to reduce to practice the simple problem:—*Given a powerful remedy which may be employed in excess, how shall it be regulated?* It matters not whether the remedy be an aperient or a saline medicine, brandy, tobacco, laudanum, diet, or hot air. It is the business of the medical man to effect this regulation, and he is equal to the task. If the calidarium be too hot, cool it; if the patient be too susceptible, let him retire to the tepidarium; if he cannot support so high a temperature for one hour, let him abide in it for only half or a quarter of the time. I cannot conceive any difficulty on this head, and I cannot realise to my mind any constitution or age repugnant to the remedy if properly and judiciously applied. I am not to be told that because the remedy stimulates the heart, it is not to be used. Every remedy that produces perspiration stimulates the heart, and it is one of the virtues of the hot air that it does stimulate the heart. Nor am I prepared to admit that in cases of disease of the heart the thermæ would be inapplicable. I believe just the contrary, that many diseases of the heart may be cured by a judicious use of the thermæ; and in the very worst cases it would prove to be the best remedy that could be employed.

The natural remedy for accelerated action of the heart particularly when excessive is the open air; a few chestfuls of air calms the heart's action and all uneasiness passes away; but to prevent the possibility of this inconvenience, the thermal chamber should be sufficiently ventilated. There should be an abundance of oxygen present in the atmosphere and a constant current of fresh unrespired air should be secured. In this respect a large and lofty calidarium has an advantage over a smaller one, but the small calidarium may be rendered equally fresh, by making several perforations through the wall and adapting the means of opening or closing them according to circumstances.

The essence of the quality of a high temperature of air is its dryness. While the human body can support a temperature of 300° and 400° of Fahrenheit in dry air, hot vapour is scalding at 120° and water boils at 212°. A gentleman whom I had frequently the pleasure of meeting at Mr Witt's, wrote to his friend, in corroboration of the account which had been given him of the heat of the thermæ:—"I have been at Mr Witt's bath; all that he told us is true. I cooked a mutton chop on my knee! and in eating it afterwards, the only inconvenience that I experienced, was in the matter of the bread; it became toast before I could get it to my mouth!" A dash of water thrown into the thermal chamber is instantly dissipated in vapour, but the temperature although actually reduced becomes sensibly hotter.

The expression "dry air," must necessarily be held to be relative; the air cannot be perfectly dry in an atmosphere traversed with a continuous current of air from without. Each time that the door of the thermal chamber is opened, a rush inwards of cold and moist air takes place; and the body of the entering man gives

off its moisture so rapidly, that in a short time, if there be several inmates, the moisture of the air must be considerable. It has been suggested that the highly heated air inhaled into the lungs must prove an irritant to those organs. I have seen no such effect, and can hardly believe it possible; the lungs and fauces are so abundantly supplied with moisture that the air must lose all its dryness before it can reach the bronchial tubes, and I should imagine, even the glottis. But I must confess to have had no experience in the application of the thermæ to susceptible or diseased lungs. If I might predicate its influence, I should declare in favour of its special adaptation to diseased states of those organs, on account of its powerful derivative action on the skin. If consumption is to be cured, the thermæ is the remedy from which I should anticipate the best chance of success.

But supposing that an instance does occur in which dry air properly ventilated, having a temperature of 130° and upwards does produce irritation of the lungs; how easy to introduce a watering pot and dash a shower through the air. Surely no man could be so unreasonable as to suggest the abandonment of an useful and powerful remedy because in one case, or in one class of diseases, it was inapplicable. My own experience, however, points to the heart and increased activity of circulation as the real origin of any inconveniences that may be felt in the thermæ; that this increase of circulation may act secondarily upon the lungs as well as upon the brain and nervous system, if allowed to continue, is of course perfectly possible.

But these are matters of detail, not of principle; if the principle be good, be worthy of adoption, experience will soon teach as to adjust it to circumstances, to regulate its application. It is for this we are philosophers of medicine; and in the present instance we have to determine the plus or the minus of temperature; the plus or the minus of ventilation; the minus or the plus of watery vapour. If we require high temperatures to act upon the blood of the cutaneous circulation, to seek out and eliminate hidden and deep-seated morbid changes, it is clear that we must have a minimum of moisture in the atmosphere.

I must again advert to the modifying influences which regulate the temperature. On entering the thermal chamber, the skin feels cold to the touch, it gradually becomes warm, but its warmth never reaches a high altitude; it is moderated by the evaporation from the surface and kept at a genial heat. On the first few occasions the perspiration does not so readily obey the call as it does subsequently; the skin requires practice to bring it into a perfectly respondent state, to cast off the torpor of a life-time and to perform its function healthily. Hence the feelings of uneasiness which occasionally oppress the novitiate on his first visits to the thermæ gradually diminish and at last finally cease. But when they do cease he has the satisfaction of knowing that his whole organisation has become strengthened, that the weak heart has become a strong heart, and that his active vitality is augmented.

The *first* physiological effect of the thermæ is, therefore, *to perfect the perspiratory or eliminant function of the skin;* to give us in fact an organic skin instead of the mere, threadbare, dirty, unwholesome, and almost useless garment of the body that goes by that name. The *second* physiological effect is to make the skin more apt for the performance of a highly important function, *the imbibition of oxygen, a function that renders the skin a breathing organ.* The *third* physiological effect of the thermæ is to *regulate the nervous capabilities of the skin;* to enable it to feel truly and not mendaciously; to distinguish between real and unreal sensation. A *fourth* physiological effect of the thermæ is to promote those changes in the structure of the skin which result in *its perfection as a healthy organ.*

It is common to associate the idea of profuse perspiration with weakness, and to imagine that the effect of abundant perspiration must be the lowering of the system. This idea probably takes its origin in the observation of the exhausting sweatings of fever, of consumption, or debility from whatever cause induced; but it has no abiding place among the true phenomena of the thermæ. The perspiration of the thermæ is a tonic emunctory process of the skin, acting under and supported and kept up by the stimulus of heat. The body feels lighter after

these sweatings, as though it had lost something which oppressed it; which is the fact. It represents those other processes of the animal economy, under the influence of which effete and often irritant matter is conveyed out of the system. Mr Urquhart, Mr Rolland, and Mr Witt, pass frequently many consecutive hours in the thermæ perspiring the greater part of the time and renewing the lost moisture of their bodies by the imbibition of copious draughts of water.

In reference to the second physiological effect, I apprehend that there can be no doubt that, in its healthy condition and exposed to the atmosphere, the law of endosmosis which rules over the destinies of the whole of nature, acts upon the human skin as well as upon all other created things, both organic and inorganic. But while I am convinced of the imbibition of oxygen by the skin in a state of health, I am also aware that that action must be immeasurably weakened in the state in which we commonly find it, partially atrophied, excluded from the light and air; and prostrated in tone and power by hot and relaxing coverings. In cutaneous disease the oxygen of the atmosphere plays a mischievous and vexatious part, and if it be susceptible of absorption in disease it must also be capable of traversing the cutaneous tissues in the state of health. Endosmosis operates its results on the human body by a combined electrical and vital agency, and a healthy electrical condition of the skin is amongst its most important properties.

In its function of a breathing organ and a transmitter of oxygen, the blood is the principal agent engaged, and the degree of absorption of oxygen will be determined by the freedom and abundance of circulation through the capillaries of the skin. Now, one of the first effects of a high thermal temperature is to augment the circulation of arterial blood through the skin, to carry the arterial stream into capillaries that have long been inactive, and to bring the circulating blood nearer to the periphery and nearer to the oxygenising element. Therefore the use of the thermæ must tend directly to the oxygenisation of the blood and to the perfection of those nutritive and vital processes that are due to the appropriation of oxygen. The lungs, which are the great oxydisers of the blood, are in structure very little different from the skin, the differences between them being more those of position than organisation; the mucous membrane of the lungs is an inverted skin, while the skin may be regarded as an everted lung.

The third physiological effect of a thermal temperature, namely, the restoration of the skin to its normal sensibility, is illustrated remarkably in the example of the little boy brought up in the state of nudity and in the constant use of the thermæ; *his skin was all face.* In ourselves, from the habitual use of clothing from our earliest infancy to one part of the body and its absence from another, we are enabled to contrast the power of resistance and endurance of the face with the opposite qualities of the skin of the rest of the body. We are accustomed to regard the skin of the covered parts of the body as more sensitive than the skin of the face; but if we look closely at the matter we shall find that the sensitiveness only applies to its weakness. It is more sensitive to pain and suffering; but less sensitive to ordinary healthy and appreciative sensations; while the skin of the face feels more truly and is less easily excited by painful impressions. When I was invited by Mr Rolland to enter his hot closet, to pass from an atmosphere of dry air of a temperature of 160°, into one of moist air at 170°, I stepped back for an instant with a feeling of scalding; but it was not the weak and sensitive skin of my body that detected the extreme heat, but the more seasoned and appreciative skin of the face and hands. The experiment, simple as it was, convinced me at once, that from constant covering with clothing, the skin becomes weakened as to its nervous influence and nervous sensibility, possesses a low nervous tone and exhibits a first step towards paralysis of power.

The fourth physiological effect of the thermæ is to strengthen the skin as an organ, independently of improving its function. That the function of an organ must be improved by the perfection of the structure of the organ is obvious, but I now wish to draw attention to an improvement in tone of the organ itself. It is well known that some persons bruise more easily than others; and that the skin is sometimes apt to be bruised by a very trivial cause, the extent and depth of colour of a bruise being no test of the severity of the injury, but simply indicat-

ing the softness and weakness of the skin of the individual. We occasionally meet with a deep black bruise as the result of mere pressure without any blow, and an ecchymosed stain from a pinch or grasp is amongst the commonest phenomena of civilised, or perhaps I may be permitted to say of *well-dressed* life. Now, ecchymosed stains and the discolorations of bruises disappear very quickly by the use of the thermæ, and the skin acquires so much and so healthy a firmness that they soon cease to be produced by trivial causes. In the thermæ the skin acquires colour, freshness, firmness, and elasticity; and it loses the muddy and faded hues of ill-health; and it loses equally the parched and arid dryness and wrinkled aspect of infirmity and age.

We have thus presented to us as the effects of a thermal temperature applied to the skin:—

1. An improvement of organic structure.
2. An improvement of secreting function.
3. An improvement in circulation and respiratory power.
4. An improvement of innervation and sensation.

Now these are extraordinary and unexpected physiological results; but results that admit of no doubt or question, and they serve to clear the way to the consideration of a still more important series of phenomena, namely, such as belong to the treatment and removal of diseases.

Looking at the skin in relation to the other organs of the animal economy, we recognise it as one of the great emunctories or scavengers of the body; and we may fairly place it by the side of those other great emunctory organs, the liver, and the kidneys, and probably, the lungs. But taking it in conjunction with the liver and kidneys, and regarding it as one of the three great scavengers of the animal system, we have the following considerations brought before us for reflection. In the climate of Britain, the skin, in many persons, is not brought into exercise for six months of the year; in many, not for nine months; in many, as in women and persons of sedentary habits, scarcely once in twelve months.

Now, this being the case, an increased amount of duty is thrown on the liver and kidneys. These latter organs are called upon to perform their own office as well as that of the skin; and for a number of years they succeed more or less well. But after a time, say about the mid period of life, the over-worked organs begin to show signs of failure; we hear complaints of the liver or of the kidneys; the liver becomes enlarged; fat accumulates in the abdominal region; hæmorrhoids are developed with congestion of the pelvic organs and symptoms of plethora abdominalis are established. After the abdominal emunctory organs, come the heart, the lungs, the brain, and the organs of sense, sight, and hearing. So that, originating from a mere deficiency of function of one organ in the first instance, a whole series of disorders are engendered, which involve in succession the most important organs of the body.

It is an axiom in medicine that the first step towards the cure of a disease, is the removal of its *cause;* and if this doctrine be applied in the case that I have just stated, we have only to restore the skin to its healthy tone and function, to bring back to their allegiance the organs whose function has become disordered by its impairment. The thermal treatment, by unlocking the pores of the skin, gives to the liver and kidneys the opportunity of recovering their tone and resuming their healthy function; and the whole of the emunctories, acting in harmony, gradually lead the way to the restoration of the entire system to health.

But suppose the mischief to have gone further; and that the disorder of function of the emunctory organs has left behind in the blood a considerable quantity of irritant matter, the product of indigestion and malassimilation. These morbid materials are moved hither and thither with the tide of the circulation, they communicate a sadness to the blood and with the blood to the entire organism; they discolour the skin; they give pains and aches to the nerves; heaviness and distemper to the brain; and they rack the joints with gout and rheumatism. Here is a catalogue of diseases all taking their rise in malassimilation, all dependant on the presence of impurity in the blood. How, then, are they to be removed?

We resort to the emunctories,—the liver, the kidneys, the skin. For the liver and kidneys we prescribe the accustomed remedies; but for the skin directly and the liver and kidneys indirectly; what remedy is there so simple and yet so powerful as the thermæ?

It must not be supposed that I advocate the thermæ as capable of superseding other remedies. My present aim is directed to the illustration of the uses of the thermæ, and therefore I recur to it frequently. I would employ the thermæ, not always as a primary means, but often as an adjuvant, more than respectable both in character and power. An increased action of the skin empties from the system a large quantity of water, with the water there pass away saline and effete substances in a state of solution, a fresh addition of water drunk during the perspiratory process also comes away rapidly, until the blood may be said to be washed clean of every impurity; poisons that have crept unbidden into the blood are drained out, as also are the broken and dissolved particles of organic transformations of a morbid type. This operation renders the absorbing powers of the system more than usually active; accumulations of fat are removed; nutritive matters are taken up and medicines find their way more quickly and more abundantly into the blood, and therefore act with greater energy. Herein we have the explanation of an apparent paradox. We reduce fat by the thermæ, because fat is an excess, a redundancy, and a result of defective emunctory power. We fatten and bring into condition those that are lean by the same means, because we render nutrition more active and facilitate the absorption of nutrient material from the digestive system.

During my short experience of the thermæ, I have seen the infant and the aged subjected to its influence, the strong and the infirm, the healthy and the diseased. I have been struck by observing the ease with which the young, and the old especially, glide into its use. If any difficulty arise, it occurs more constantly among the middle-aged than at either extreme of life; and more frequently among women than among men. There are reasons for these peculiarities which those accustomed to the thermæ will immediately recognise.

Among my fellow-subjects of the thermæ, I have seen numerous examples of relief from painful affections dependant on morbid composition of the blood. Several were cured of gout, of rheumatism, of neuralgia. A clergyman and Doctor of Divinity who resorted to the thermæ to reduce redundancy of adipose accumulation suffered habitually during the winter season from catarrh, bronchitis, and neuralgia, and was often laid up for weeks together with these affections. Since he has adopted the use of the thermæ, which he enjoys excessively, he has diminished in bulk; he has lost all proneness to catarrh, and bronchitis, and no longer experiences the pangs of neuralgia. Recently I was much interested in seeing a case of eczema of the face treated throughout by the thermal process alone; the patient lived in the thermæ for several days, he used very high temperatures and he succeeded completely in curing his disease. It was curious, he remarked, to observe the patches of eruption; they yielded no perspiration and looked like so many parched up islets in the midst of the surrounding copiously-perspiring skin. At about the same time, a medical friend consulted me for prurigo senilis. "You know Mr Witt; go and ask him to admit you to his thermæ," was my counsel. The next time I paid a visit to my friend's thermæ, there was my elderly patient, luxuriating in the fulness of enjoyment. That day he left his prurigo senilis behind him in the calidarium, and I believe has had no reminder of it since. He went back to his home on the coast, and now offers a seat in his own thermæ to his curious or suffering friends.

How often since my first acquaintance with the thermæ have I longed to prescribe it to those who have been suffering from some forms of cutaneous disease. How important it will prove in a large group of diseases which have their origin in defective vitality and defective nutrition of the skin; prurigo among these; acne and its allies of torpid function; chloasma and its associated discolorations. I have now under treatment two cases of the ancient leprosy, elephantiasis græcorum, that have been much benefited by the thermæ. Mr Urquhart has met with a case of chronic psoriasis which was cured by the thermal treatment alone.

I have hinted at the curative effects of very high temperatures; and both Mr Urquhart and Mr Rolland have mentioned to me important results from this process. It occurred to Mr Urquhart's mind that as *fever-heat* was represented by 112°, he should be able, could he create a temperature higher than fever-heat, to supersede the stage of fever at once. Thus, taking the beginning of the cold stage, which nature seemed to struggle painfully to overcome; he was enabled by a high thermal temperature to cut it short at once and to pass over it and the hot stage to that which nature seemed desirous of reaching, namely the sweating stage. He believes that at a certain temperature he can put a stop to the fermentative process of zymotic diseases; and, at a higher temperature still, destroy animal poisons. He suggests, moreover, a curious and important inquiry, namely, the influence on the chemical composition of the blood, circulating through the capillary plexuses of the skin, of hot air having a temperature of 160° of Fahrenheit. Not so much its influence on the healthy blood as on the blood of persons in a state of disease.

A member of Mr Urquhart's family, a child, was accidentally burnt; the burn was distressingly painful; various applications had been made without relief; the child was accustomed to the thermæ and desired to go into it; it was carried into the thermal chamber and the pain of the burn was immediately assuaged. Mr Urquhart, himself, received a severe scald, he betook himself to the thermæ; there, in a heated atmosphere, he directed upon the injured part a blast of air hotter than the temperature of the apartment: the pain became lessened, the process of effusion which results in the production of a blister was arrested; to use a popular expression, "the heat had drawn out the heat."

In an earlier page I have said that the active function of the skin, by removing all excess of fluids from the blood, by inciting in the blood a desire for fresh fluids, becomes an important agent of nutrition. Let us suppose that the fluids which are removed by the process of perspiration, contain in solution the old and worn-out material of the body; while the fluids with which we supply their place are highly nutritious; it is clear that we shall nourish the blood, and through the blood we shall nourish the body. I am here supposing a simple physiological process, which, although unseen, is in constant operation in the animal organism. The necessity for nutrition is proportioned to the loss of material; the waste creates the necessity for supply.

In the retort house of our gas-factories, where perspiration is excessive and is continued through the entire day, the men are allowed a certain quantity of oatmeal which is made into thin gruel, and drank largely as often as the waste of fluids occasions thirst. The men are the gainers by the exchange; they give out waste water and used-up solids, and they receive in exchange fresh water and nutritious solids. It is needless to say that by this process they get into high condition both of structure and health.

If we have a weakly and ill-nourished child, or a thin or emaciated adult, in whom there is no organic disease, but simply a powerless condition of the nutritive functions, may we not hope by means of the thermæ to bring about a more active and healthy nutrition, and thereby change that which is weak into strength —that which was skin and bone, into flesh and blood and their usual concomitants.

The same argument applies to disease in all its protean forms; we must apply ourselves to the hope of improving nutrition, of draining away that which is bad, and supplying its place with that which is good. It is here that our pharmacopeia will afford us important auxiliaries, and those auxilaries will be placed on the best footing for developing their most useful properties. Viewing the operation of the thermæ in this way, we are imperceptibly led to the conclusion that every morbid process, of whatever kind, must be relieved by its use, and we ask ourselves, not what disease will be benefited by the thermæ, but what disease can resist its power?

Looking at the thermæ in a social and political point of view, we find that it is wonderfully adapted for the preservation in health of large bodies of men, combining in itself the respective advantages of air, exercise, and ablution. The Romans

were so impressed with its importance, that they carried with them the genius of their thermæ wherever they migrated, and they put it in operation wherever they were located, even for a short period of time. Thus we discover vestiges of the thermæ in all their temporary encampments, as well as in their cities; and by its means they kept themselves in health even when hemmed in and surrounded by warlike enemies.

Adopted by our own army, there cannot be a doubt that it would very considerably reduce the rate of sickness and death and add to the efficiency of the men. It is applicable also in all cases where numbers of persons are collected together, as in barracks, prisons, poorhouses, factories, and schools; in large business establishments where a considerable number of young men o r young women are assembled; or in places of temporary meeting as the House of Commons and clubs. It must always be borne in mind that the thermæ not only offers advantages as respects physical health, but it also conduces to moral vigour. Those who have recourse to it would be more likely than others to shun vicious excesses of all kinds, particularly of stimulants, and be disposed to respond in their hearts and lives to the beautiful sentiment of the poet Thomson:—

"Even from the body's purity, the mind
Receives a secret sympathetic aid."

But the usefulness of the thermæ has even a wider sphere; the Londoner, or the inhabitant of a large city, would live as healthily immured within his city walls as the rustic amidst the fields and meadows of the country. His thermæ would be to him in the place of a country house, of a horse, it would give him air, exercise, freshness, health, and life.

I might add very materially to the long list of conditions to which the thermæ might be applied with advantage, but I limit myself to a single one more; it is that of extensive works, employing a large number of men, either in operations in themselves unsalutary, or in unhealthy localities. The importance of perserving a body of working men in a state of health, and in the best condition for the performance of their duties, must strike every one, and is an object worthy a moderate sacrifice on the part of proprietors or owners. There are many localities in which miasmatic fevers abound, and constantly incapacitate the working force of large operative establishments. I believe that a few pounds expended in thermæ would correct this evil; would put the men into condition to resist the miasmatic force, and to eject the poisonous elements from the blood when they had already found admission into the organism.

In conclusion, I feel that I cannot do better than leave the important questions raised by this communication in the hands of the members of the British Medical Association, from whom I feel assured, they will receive all the attention and practical consideration which they deserve.

CATTLE DISEASE IN AUSTRALIA.

(*From the Melbourne Age*, Aug. 25, 1860.)

The disease in cattle, known as pleuro-pneumonia, now in full progress within a few miles of Melbourne, has attracted much attention lately. L.1000 has been voted by the Legislature for compensation to the owners of destroyed cattle. The Government have acted promptly in the matter, and have appointed W. Lyall, Esq., M.L.A., and Alexander Brock, Esq., as Commissioners, to make full inquiries into the disease, and to make the necessary arrangements with the owners of any cattle that may become diseased, for allowing them some compensation for the immediate destruction of all such infected stock. As yet the disease has proved purely local in its extent, but within that extent the effects have been so disastrous as to create almost a panic amongst neighbouring farmers. Near Preston, about six miles N.E. of Melbourne, on Mr Hooper's farm, an investigation has taken place into the state of the cattle affected with this disease; out of

124, 9 have died, 1 has been slaughtered in an advanced stage of the disease, and it is surmised that all the rest are more or less affected by it. With regard to the disposal of them, we believe that an understanding has already been arrived at, and now only awaits the approval of the Government. Upon this being obtained, the whole of the stock, numbering 124, will be slaughtered, Mr Hooper being compensated at the rate of L.5 per head (the full value of them), Mr Hooper to find all the labour, and to act under the superintendence of some person appointed by the Government. As the matter is one of interest to English readers, we subjoin a pre-mortuary and post-mortem examination of the beast before referred to, made by competent authorities on the spot:—"Previous to being slaughtered, she was subjected to a careful examination by Mr Miscamble, who stated that her right lung was perfectly useless—'as silent as the grave;' and on striking the ribs with the hand, there was not the natural hollow sound, but one similar to that experienced in striking a bag of flour. The left lung was stated to be diseased, though still able to perform its duty so far as to keep the animal alive. Upon opening the animal after death, the symptoms were the following:—A white glutinous mucous lined the inside of the windpipe; the right lung was swollen to an enormous size, three or four times larger than its usual dimensions, and had lost all the characteristics of that organ, having become as firm and compact as a piece of beefsteak, and streaked and variegated in colour like a piece of marble. The left lung was also diseased, as numerous tubercles had become formed in it, but it did not appear as much enlarged. The heart was thin and flaccid, but this was expected as a natural consequence following the decay of the lungs, and the defective circulation arising therefrom. The liver was also diseased, and abounded with large flukes in the biliary ducts. The pleura was altogether gone on the right side. There had been an effusion of lymph, and the large diseased lung had been adhering to the internal cavity of the ribs, and had communicated the disease even to the flesh, which was much discoloured. Having cut two slices from the diseased lung, we brought them into town. Dr Rolf has since examined them under the microscope, and he is of opinion that he could discover traces of vegetable growth in the structure of the lung. He is desirous of prosecuting the inquiry further before he says definitely anything more about their appearance." We ought not to leave this subject without adding to what we have already said, that although some effort has been made to trace the infection of this disease (if infection it be) to its conveyance by means of a bullock yoke from Mr Boadle's farm, to which it was originally introduced by an imported cow; yet the peculiar malignity of it in this instance must be attributed to the unusual exposure of the cows all night, in a miserable shed, to the influence of the cold south-west winds and drifting rains which prevail in winter, and the more disastrous and biting winds which sometimes prevail from the south-east immediately after the cessation of hot winds, and during the night time. The stable in which the cattle were confined was directly open to these winds, in an undrained marshy place, and the cattle themselves of an inferior kind, bred for the most part from young, undeveloped, and miscellaneous heifers. In this early stage of our history as a colony we are sorry to add that both classes of predisposing causes are exceedingly prevalent. As a further illustration of causes for predisposition in colonial cattle, we ought not to omit the following paragraph which lately appeared in the *Farmers' Journal*:—"The Commissioners aforesaid having heard that cattle apparently diseased had been seen lately near the Rocky Waterholes, sent up a qualified person to inquire into the matter. One beast was there killed and examined, when it was found to have been dying from absolute starvation."

MEDICAL REPORT ON PLEURO-PNEUMONIA.

(*From the North British Agriculturist*, Oct. 24, 1860.)

The following report, by I. M. Ward of Newark, who was one of the commissioners appointed by the New Jersey State Agricultural Society to examine into

the causes and nature of the cattle disease, is valuable for its facts, and well calculated to allay the fears which have been excited in regard to the spread of the disease:—

. . . . Your commission arrived at the conclusion that the pleuro-pneumonia of Massachusetts, denominated by them, as in Europe, the contagious pleuro-pneumonia, is identically the same disease that has prevailed in King's County, Long Island, in New York; in the herd of Mr Prentice at Albany, and in various parts of New Jersey at different times during the last seventeen years:—

This opinion we regard as sustained by the following facts:—

First, historically—The disease was introduced into Massachusetts by cattle imported from Holland by Mr Chenery; these cattle, sick on their arrival, were carried immediately to his herd at Belmont; one after another sickened, until the whole herd, sixty in number, was affected. To that herd it was confined, till carried by an animal sold to Mr Stoddard at North Bloomfield, and from that herd to other herds; no case of the disease having occurred that could not be traced to the Chenery or Stoddard herds.

The disease was introduced into Brooklyn by a cow imported from Germany in 1843, and taken directly from ship-board into one of the large milk dairies in that city. In the county of Kings the disease has lurked until the present time, making its incursions into other parts of the country as opportunities to convey it have offered, by the transfer of some animal from an infected herd.

In 1853 the disease was carried by a cow to Mr Prentice's farm at Mount Hope, near Albany, (a cow originally from the dairy of Mr P., after wintering in Brooklyn, was being returned to him, bearing the disease with her.) Thus introduced into his herd, it extended from one animal to another, not ceasing to do its work until such a perfect separation of the animals was effected that not more than two, in most instances but one animal, were kept in a place. Early impressed with the conviction that the disease was of a contagious character, and that his future security was in prevention and not in remedy, Mr Prentice resorted to a quarantining of the sick, and a rigid isolation of the remainder as above detailed, and thus controlled the disease.

The testimony of Mr Johnson was that the disease was carried to his farm near Newark by animals which he purchased in the New York market. Sickening soon after their arrival, the disease was first communicated to animals in the contiguous stalls, and from them to others, till all the cattle on the farm have been the subject of it. Isolation has not been resorted to here, and the whole history cannot now be written; for much seed, we fear, has been sown that, when ripened into harvest, may give us a sad appendix. The history of the other outbreaks of the disease in New Jersey, viz.: in the herd of Major Edgar, at Rahway, and of others in Morris Co., if written would be in corroboration of what we have here given.

Second.—Its identity is proved by a similarity of the symptoms, marking the period of incubation, development, progress and termination of the disease in all the localities in which it has been observed. The description given by Mr Prentice of the disease in his herd was as like to that of Mr Johnson's as language can portray disease. When the disease, as it appeared in the Johnson herd witnessed by your commission, was described to the veterinary surgeons in Boston, they declared it at once identically the same. Not one symptom noted in the sick there but has been observed in Mr Johnson's animals.

The post-mortem examinations declare quite as unequivocally their identity. The same engorged condition of the lungs, producing an increase in the size of the organ, that would seem almost incredible to one who had not witnessed it—as well as of weight from 5 to 20 pounds, and in one instance to 27 pounds: the same hepatizations, adhesions, serous effusions, and prevalent deposits, in abscess and cysts, have been observed wherever examinations have been made.

And thirdly, in the fatality of the disease. Mr Chenery's herd consisted of 60 animals, of which number 30 have died. Mr Prentice's 31, of which 16 died. Mr Johnson's about 20, of which a little more than half died.

It may not be unimportant to observe, inasmuch as it has been claimed that the Dutch animal is particularly obnoxious to the disease, from hereditary predisposition, acquired from the disease having prevailed in Holland over 200 years, and thus tainted the stock; that the per-centage of loss in the Dutch herd of Mr Chenery was a fraction less than in Mr Prentice's Ayrshires, while that in the native stock of Mr Johnson has exceeded that of both. Quite as great has been the per-centage of loss in other native herds in Brooklyn and New Jersey, teaching us that no breeds of horned cattle are exempt from the disease.

And, lastly, and that to which your commission would attach the greatest importance in their report, in view of its practical bearing upon public interests, is their profound conviction that it is most violently contagious. If there is any reliance to be placed on human testimony, every case of the disease that has occurred in Massachusetts can be traced from animal to animal, step by step, through the Stoddard and Chenery herd, to the cows imported from Holland. This fact was indisputably established in the investigation had by the Committee of the Massachusetts Legislature. The disease in King's county, it is admitted, was introduced by the imported cow from Germany, that sickened soon after her arrival and destroyed the dairy into which she was introduced. With equal certainty has the disease been traced into Westchester county, into the herd of Mr Prentice at Albany, and to the different places in New Jersey, where at different times there have been outbreaks of the disease. That it is contagious and not epidemic in its character, it is pertinent to observe, that the fact appeared in evidence before the Massachusett's Commission, that the disease never extended from Mr Chenery's herd to an animal in the town in which he lives; but to other towns—where he had sent his animals the disease was carried, and that wherever he had sent an animal to come in contact with other animals, there the disease was carried. You may isolate contagion, but no man can so effectually bar his door to shut in an epidemic disease, that it will not find its way to his neighbour's dwelling. Your Commission cannot be expected to enumerate all the facts that have come to their knowledge and led them to believe the disease to be eminently contagious, but cannot refrain from stating one, that carried conviction to the minds of the common people where it occurred, of the contagious character of the disease, without asking men of science their opinion. A pair of cattle in North Brookfield, in working condition, from an infected herd, were put into a team of twenty-three yoke, and were thus employed a day and a half in moving a building; the cattle comprising this large team belonged to thirteen owners. When the work was done and the team discharged, the disease was carried to the thirteen different herds—every animal exposed to the diseased yoke taking the infection and carrying the disease to their respective herds.

No satisfactory explanation of the virulence of the contagion in this disease of the horned cattle, far exceeding anything known in the human subject, can be offered, unless it be in the fact, that the seat of the disease being in the structure of the lungs, every expiration of the animal, surcharged with the contagious miasm, must so load the atmosphere with the infection as to impress every animal that inhales it.

We admit this has no parallel in the human subject, neither has the subject in its pathological character. In pneumonia in the human subject the vesicular structure of the lungs is unquestionably the proper seat of the disease; but in horned cattle the interlobular cellular tissue is the part primarily and mainly affected; and the cellular structure is second only, and then only is it observed when the disease in the interlobular tissue is far advanced.

In this opinion of the contagious character of the disease, your Commission is assured they are sustained by practical men—men of science and editors of agricultural journals in Europe—where the more extended prevalence of the diseas has invited to more thorough investigations than has been enjoyed here.

Should an opinion be asked as to the economy of a course to be pursued on the appearance of the disease, we would advise an immediate separation of the sick animals from the remainder of the herd, rigidly confining them to appropriate sheds and pens removed at a considerable distance from the other animals on the

farm, and an isolation of all that may have been exposed to the infection until the danger was passed. Our only safety at present seems to consist in isolating the different members of an infected herd. The vastness of the interests at stake may make it the part of wisdom to secure most certainly in all cases the most rigid observance of this practice by legislative enactments in this State similar to what has been had in some other States.

While it is true that no plan of treatment of the sick hitherto pursued has been so successful as to secure the confidence of practical men, either in this country or Europe, has not the time arrived when investigations can be made by scientific men, as to the nature and manifestations of the disease, and its pathological phenomena be so fully comprehended as to give us a knowledge of the laws that govern it, and thus bring it, as all other diseases that affect the animal economy have been brought, under the controlling influence of medicinal agents? To aid in the discharge of this duty to our domestic animals, we would respectfully ask, if it is not the part of wisdom for the State to appoint a Scientific Commission, composed of men of education, with habits of investigation, and a thorough knowledge of physiological laws, to do this work? More especially would this seem to be the case if the disease is to abide with us, and to be, as in Europe, a common or prevalent disease in our horned cattle.

Assuredly may we hope for such a consummation, since hitherto there have been no evils that human science, rightly directed, and human knowledge, perseveringly applied, have not combatted with at least a compensating amount of practical success.—I. M. Ward.

PROPOSED VETERINARY COLLEGE IN DUBLIN.

(*From the Weekly Agricultural Review*, Oct. 12, 1860).

A Meeting of gentlemen interested in the establishment of a Veterinary College in Dublin was held on Tuesday, 2nd October, at the office of the *Agricultural Review*, Great Brunswick Street — Hans Irvine, Esq., in the chair. Dr Cameron, the projector of the proposed institution, detailed its objects, and the promises of co-operation in the carrying out of these objects which had been given by several noblemen and gentlemen. After which, on the proposition of Captain Thornhill, J.P., secretary to the Royal Agricultural Society, seconded by Professor Murphy, Dr Cameron was requested to act as secretary to the meeting, and also to aid in promoting the object it has in view. A motion was then proposed by James Malley, Esq., seconded by D. Tuke, Esq., and passed unanimously, expressing the opinion of the meeting that it is in the highest degree desirable to establish a Veterinary College in Dublin, and that a committee be formed to carry out this object. The meeting was then adjourned to the following Thursday, when a discussion as to the best means to be adopted in establishing the proposed college ensued, and the honorary secretary was requested to draw up a prospectus, setting forth the objects of the projected institution. A committee was then formed, consisting of the following:—Lord Talbot de Malahide; Sir Percy Nugent, Bart., D.L.; the Hon. J. P. Vereker; Hans Irvine, Esq.; William J. Levinge, Esq., J.P.; Finlay W. Cusack, Esq., J.P.; John Harold Barry, Esq., J.P.; Captain Thornhill, J.P., Secretary to the Royal Agricultural Society; Professor Murphy, and Dr Charles A. Cameron, Honorary Secretary, with power to add to their number. The committee thus formed met on Wednesday, the 10th instant, the Hon. John P. Vereker, in the chair, when the following prospectus was submitted and adopted—

"PROSPECTUS OF THE VETERINARY COLLEGE OF IRELAND.

"It is a startling fact that, with live stock numbering over *Nine Millions*, Ireland has not a single school for teaching the veterinary art. Thirty-four millions' worth of the most precarious of property is left almost entirely in unskilled hands. These facts convey some idea of the amount which the country has at

stake in this matter, and of the field which is open for veterinary practitioners in Ireland.

"The increasing prevalence of disease, and the fearful ravages which it has committed among cattle during the last few years, add, if possible, to the importance of the subject; and yet, at this moment, there are not thirty veterinary surgeons in the whole country.

"It is no wonder, then, that whilst the capabilities of the country, and the requirements of our own and the neighbouring populations, lead us to expect a steady annual increase in this description of our national wealth, during the past twelve months alone there should have been a falling off in horses, cattle, and sheep, of well on to three thousand—a diminution in one class of property to the amount of more than a million and a-half of money!

"The want thus indicated has long been felt, and the subject of supplying it has often been before the councils of our national societies; but owing to the multifarious character of their own proper engagements, the problem has hitherto remained without a complete practical solution.

"Many years ago, there was a Professorship of Veterinary Medicine connected with the Royal Dublin Society, and the duties ably fulfilled by the late Mr Peile; but, although his lectures were well attended, and were productive of much good, they were unsupported by demonstrations in the dissecting-room, clinical instruction, and the various other means of acquiring a proper knowledge of the art. So this important branch withered away, and another has never been engrafted in its place.

"But that there is no valid reason why this state of matters should be allowed to continue, is proved by the fact that within the last fifty years a veterinary college has been established in England, and is now performing its functions with a large pecuniary profit to itself, and immense benefit to the country. That similar results may be realized in Ireland, is more than proved by what has been done in Scotland, where also, with vastly less stock than we have, and with but half our population, there are two veterinary colleges in successful operation, qualifying young men for an honourable and lucrative profession, felt there to be essential to the successful prosecution of modern agriculture.

"A veterinary college, then, is loudly called for in Ireland, and the most complete success is assured by the circumstances under which it has been resolved to establish it.

"The objects of the Institution are as follows: 1st. The instruction of young men for the profession of veterinary surgeons. 2nd. The instruction of herds in the management of the more commonly occurring, but simple diseases of stock. 3rd. Investigations relative to the causes of epidemic diseases affecting the inferior animals. 4th. The treatment of the diseases of the domestic animals.

"The college would consist of:—1st. An infirmary, with wards for horses, horned stock, sheep, pigs, and dogs. 2nd. A lecture theatre. 3rd. A museum. 4th. A dissecting-room for the performance of demonstrations. 5th. A chemical laboratory. 6th. A school of farriery.

"The course of instruction, administered by properly qualified professors, would be:—Descriptive Comparative Anatomy; Physiology of the Domestic Animals; the Principles and Practice of Veterinary Medicine; Veterinary Materia Medica; and Chemistry and Practical Pharmacy. The course would be still further amplified by instruction in the Principles and Practice of Shoeing Horses.

"L.5,000 will be required to establish the Institution. Of this sum, four-fifths would be expended in the erection of buildings, in the purchase of furniture, &c., and L.1,000 would be retained to meet the current expenditure.

"This capital, it is believed, may be raised by means of donations from those noblemen and gentlemen of enterprise, who, as owners of farm animals, and hunting and racing horses, are to be deeply interested in the founding of this Institution. Already many donations have been offered by noblemen and gentlemen interested in this important movement; and when the Institution is firmly established it will become self-supporting, as its revenue, derivable from the fees

of students and owners of animals under remedial treatment, must be very considerable.

"Further information on the subject will be supplied on application to the Secretary, Dr Cameron; and Subscriptions will be received by the Treasurer *pro tem.*, Hans Irvine, Esq., 1 Rutland Square, East.

"Temporary Office: *Agricultural Review* Office, 7, Great Brunswick Street, Dublin."

(*From the Irish Farmers' Gazette*, Oct. 20).

We this week noticed a prospectus of a proposed veterinary college for Ireland, copied into the *Agricultural Review*, and which is so worded as to appear to be quite new to the public, but which is, with little exception, a recapitulation of various articles that, from time to time, have appeared in the *Gazette*, from almost its earliest date; we are much pleased to find that the subject, which has been so frequently agitated by us, has gained ground, and that we are not doomed to be left alone in its advocacy. In the *Gazette* of April 16, 1853, vol. xii., page 188, in reference to a paper read before his Excellency the Lord Lieutenant, at the Royal Dublin Society's evening meeting, by Dr Toler, on the diseases of Cattle, we thus wrote:

"In the brief notice which we are obliged to take of this valuable article, two important facts are brought forcibly before the public—one of which is the enormous amount of capital invested in stock in this country; the other, that while every other civilized nation almost, has established veterinary colleges, for the scientific, medical, and surgical treatment of the domestic animals, still, to our shame and disgrace, nothing of the kind has yet been attempted in this country. Dr Toler, quoting from the census returns of 1851, estimates the value of cattle in Ireland in that year, taking the average value at L.6, 10s. per head at L.19,288,496

An enormous sum to be invested, but, on looking at the return, we find that in sheep, at L.1, 2s. each, a further capital is invested of 2,334,340

In pigs, at L.1, 5s. each 1,356,071

And in horses and mules, at L.8 each 4,325,496

Total, L.27,304,403

"We do not think that the actual present value can be over-estimated at less than half as much more, which would make a sum of nearly 40½ millions of pounds; and yet this enormous capital is embarked in a project the most frail, and more subject to destruction than any other commodity, if we may use the word, that we know of, without any organized system for its safety; and this, too, forming the great bulk of the food of millions of human beings. Dublin, in her medical and surgical men, is, we believe, second to none in education, talent, and practical knowledge; yet, to our shame be it said, we have no veterinary college or hall for the treatment of the domestic animals.

"However, this seems likely to be removed at no very distant date. Dr Carte, the very talented curator of the College of Surgeons, has lately read a paper on apoplexy in pregnant ewes, before the Royal Dublin Society, at one of the sectional meetings, (see *Gazette*, vol. xii., p. 159). Dr Toler had previously read a very excellent paper on pleuro-pneumonia, and other diseases in cattle, (see same vol., p. 64). And we trust that, through the united exertions of the faculty, the government may be induced to give aid, for the establishment and maintenance of a Veterinary College for the treatment of our domestic animals, and the education of not only veterinary surgeons, but for the instruction of farmers and their herds in the various operations of bleeding, &c., in which they are now woefully ignorant."

Thus, we expressed a hope that the medical men of Ireland, of whom the country has just reason to be proud, would so exert themselves in this great movement that, by private subscriptions and government aid, a veterinary college should be established for the treatment of our domestic animals, the education of veterinarians, and the instruction of farmers and their herds.

In the prospectus referred to it is proposed to raise the sum of L.5,000 by public subscription, the estimated minimum sum required for the necessary buildings—on which L.4,000 out of the L.5000 is to be spent—furniture, and the maintenance of a complete veterinary institution. We need hardly say to the more thinking and practical portion of our readers that such a sum, large as it is, and difficult as it would be to raise, would be wholly inadequate to meet the outlay necessary for the establishment of such an institution, particularly when it is taken into account that the site would have to be purchased, which, as property now sells, would absorb the greater part, if not the whole, of the L.5,000—after which L.4,000 is to be sunk in brick and mortar. Oh, ye lucky builders!

It may now be fairly asked, as we have been at all times the strenuous advocates for the establishment of such an institution, do we mean to throw cold water on the project? We say, By no means; but we would first endeavour to rouse up the spirit of the Royal Dublin Society, to whom it belongs to do an act of justice to the country, to whom it is owing, by taking the initiative, and exerting the collective power they undoubtedly possess, in the establishment of a veterinary college. When we formerly stirred our pen on this subject we were not aware that the project of the establishment of a veterinary college was part and parcel of almost the original foundation of that now venerable society. A query was lately put to us as to whether such an institution was now in connection with the Royal Dublin Society, and which query referred to an act of parliament which gave them both the power and the means to do so. We procured the act referred to, which, with the query of our correspondent, was published *in extenso* in the *Gazette*, vol. xviii., page 216. We find by this act—40 Geo. III., chap. 31—passed sixty years ago, and by the first imperial parliament which sat after the Union, that the sum of L.15,500 was granted to the Royal Dublin Society for the following purposes, as appears by the subjoined extract:—

"And that both the said sums of Five Thousand Five Hundred Pounds, and Ten Thousand Pounds, shall be applied by the said Society in manner following; that is to say, That a Sum of One Thousand Five Hundred Pounds be appropriated thereout by them, to be applied by their Committee of Agriculture in maintaining their Botanic Institution at Glassnevin, and in paying to Walter Wade, Doctor of Physic, their Professor in Botany, a Salary not exceeding Three Hundred Pounds for one year, to the Twenty-fifth Day of March, One thousand eight hundred and one, for superintending the said Institution, and giving a full Course of Lectures on Botany, and the Application of that Science to Agriculture and Manufactures; That a further Sum of Three Hundred Pounds be applied thereout by the said Society, in paying to Mr William Higgins, their Professor of Chymistry and Mineralogy, a Salary for one Year to the Twenty-fifth Day of March, One thousand eight hundred and one, for his Attendance on their Elaboratory, and giving a full Course of Lectures on the said Subject; That a further Sum, not exceeding Seven Hundred Pounds, be applied thereout by the said Society in Bounties on Manufactures, to be paid on the Sale thereof, and on such Manufactures only as are not entitled to receive any other parliamentary Encouragement, by Bounty, Premium, or Grant; That a further Sum, not exceeding Three Thousand Pounds, be applied thereout by the said Society, in Premiums for promoting Agriculture and Planting, and that the remaining Part of the said two Sums of Five Thousand Five Hundred Pounds, and Ten Thousand Pounds, and all such Parts of the foregoing several Sums, except the sum of One Thousand Five Hundred Pounds appropriated as aforesaid, as shall remain unapplied in manner aforesaid, shall be applied by the said Society in procuring agricultural Examinations into all or any of the Counties of this Kingdom, in erecting Drawing Schools, Exhibition Rooms for Artists, Repositories for Implements of Husbandry and Manufactures, Buildings for a Veterinary Institution, and such other Buildings as the Society shall deem expedient, in paying a Salary to a Veterinary Professor, and maintaining a Veterinary Institution, in maintaining and extending their Libraries, Mineralogical Museum, their other Museums, and their Chymical Elaboratory and Experiments, or in otherwise encouraging Agriculture,

Planting, Manufactures, and Arts, and in obtaining and diffusing knowledge respecting the same."

Now, out of this sum of L.15,500, L.1,500 was specially granted for the Botanic Gardens, including L.300 as Dr Wade's salary, L.300 for the salary of the Professor of Chemistry and Mineralogy; L.700 for bounties on the sale of manufactures, and L.3000 in premiums in promoting agriculture and planting, and the balance of L.10,000 to be applied to various departments in the arts and sciences named therein, amongst which is specially named the necessary buildings for a veterinary institution, in paying a professor, and the maintenance of such an institution. Now, it must be observed that this sum of L.15,500 was obtained on the petition of the Royal Dublin Society, whose committee must have previously estimated the full cost of the several departments proposed to be maintained or established in connection with the Society. How much or how little of the L.3000 was devoted to agriculture or planting we know not; but that a veterinary college was not established is certain; and what became of the money the society of that day can only tell.

MISCELLANEA.

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CORRESPONDENCE RELATING TO THE SKELETON OF ECLIPSE.

To the Editor of the Standard.

Sir,—In your paper of this day, in an article from the *Scotsman*, headed "The Skeleton of Eclipse," it is stated that "Professor Gamgee has secured for the New Veterinary College the bones of this noble animal, at a cost of 100 guineas. The skeleton, for nearly 70 years, has been in the possession of the illustrious Bracy Clark,"&c. In "Lyson's Environs of London," under the head of "Stanmore Parva," I find the following statement:—"The site of Canons, with the park and demesne lands, were purchased by William Hallet, Esq., who built the present villa. His grandson sold it to Dennis O'Kelly, Esq., the well-known possessor of the famous horse Eclipse, whose bones lie buried in the park."—I am, &c.

A Constant Reader.

23, Orsett Terrace, *Nov.* 10.

To the Editor of the Scotsman.

Dublin, November 15, 1860.

Sir,—A paragraph entitled "The Skeleton of Eclipse," appearing in the *Scotsman*," has come into my hands, and as I have lived over half a century in the belief that the skeleton of a horse in the Veterinary Museum of the Dublin Society was that of Eclipse, I would like to know where I may find the words, "They [the bones of Eclipse] may be securely referred to as an exceptional model in which to calculate speed in horses." I know that St Bel (not Sainbel) measured the head of Eclipse, and made it, *when he was living*, a scale or measure, to which he compared the dimensions of the other parts of this horse and of other living horses; but I want to know, if he measured and compared the skull and bones of the skeleton also? If that had been done, and the measurements published, we may be able to decide which of the two skeletons now claiming to be genuine is really that of Eclipse. The skeleton we have has been in Dublin above sixty years, and up to the present time has been held to be that of Eclipse—and, as such, it appears to have been sold in London, or given to the Society, as a contribution to their Veterinary Museum bought there, about ten years after the death of Eclipse.

As it is a matter of scientific interest to have the integrity of the skeleton of

Eclipse settled, it may be well to have the bones of those claiming to be his measured, and the bones of the feet of both carefully examined for traces of that morbid or diseased structure which towards the end of his life so much detracted from his value as a stud horse.—I am, &c.

M. R. D. S.

To the Editor of the Standard.

Sir,—In answer to your correspondent of the 10th inst., I trust you will insert the following statement. It is mentioned, in the interesting account, by Mr Bracy Clark, of the celebrated race-horse Eclipse, that after his dissection by Mr Sainbel, first professor of the London Veterinary College, that his flesh was buried, and cakes and ale were distributed after the manner observed at the funeral of the Godolphin Arabian. As he died at Canons, no doubt his flesh was buried there, but certainly not his bones, as is evident from Sainbel's "Essayon the Proportions of Eclipse," beginning with the mention of his death in 1789, stating that he dissected him himself, but "did not open the skull, as it was my intention to preserve entire the skeleton of so famous a horse," (page 11). At page 25 is another mention of this kind, and at page 35 he says, "All these perpendicular lines, which existed really in Eclipse, as may *be seen in his skeleton*, constituted the most beautiful and important quality of his structure." This work contains two large plates and extends to 83 pages relating to the anatomical proportions of Eclipse, and he concludes his notice of the first plate thus:—"These same lines may serve as rules in the choice of the best race-horses." This is, surely, conclusive as to the preservation of the skeleton.—Yours,

Nov. 20. C. P.

To the Editor of the Scotsman.

New Veterinary College, Edinburgh, Nov. 30, 1860.

Sir,—I have returned from London with the skeleton of Eclipse; and as doubts have been thrown out in several quarters, with regard to its authenticity, will you kindly insert the following statements:—

The skeleton has been purchased by my son for the museum of the New Veterinary College, from Mr Bracy Clark, who, although ninety years of age, is still endowed with clear intellect and memory. Mr Clark states on the authority of his late brother, Mr Henry Clark, who was fifteen years his senior, that only some parts of Eclipse were buried, and that he was present on the occasion. These parts were interred on the estate of Dennis O'Kelly, Esq., the owner of this celebrated horse. Cakes and ale were partaken of in commemoration of the event, as had been done at the burial of the Godolphin Arabian. Mr Clark furthermore states, that the skin and skeleton were preserved. The latter was admirably dissected by Mons. de Sainbel, who afterwards wrote an elaborate essay on the geometrical proportions of Eclipse, which work was said to have brought the able anatomist from the French Veterinary Schools, to the notice of the English nobility and gentry, and led to his being placed at the head of the London Veterinary School, on its first establishment. Subsequently, Mr Richard Lawrence made diagramatic drawings from the bones of Eclipse, published to illustrate M. Sainbel's work, which was not brought out until after his death. The skeleton of Eclipse was given by Mr O'Kelly to Mr Bond, a favourite pupil of Monsieur Sainbel, and who had been a fellow-student and worker with Mr Bracy Clark. On the death of Mr Bond, the skeleton was presented by his widow to Mr Bracy Clark for services rendered; from that time it has remained in this gentleman's private study, until I removed it on Friday 23rd inst., to convey it to Scotland.

As to the question raised about the skeleton of Eclipse being in Ireland, it may be well to state that there were a son and two grandsons of the celebrated horse, all of which went by the name of young Eclipse; the first of these won the Derby stakes in 1781. How many horses besides the above-mentioned have since gone

by the name of Eclipse, it would be difficult to estimate. I have known several. In the skeleton now in our possession are the marks of disease referred to by the Dublin correspondent, of which Eclipse suffered towards the close of his life, and allusions to which may be found in the "Fragmenta Veterinaria," published in 1859, by Mr Bracy Clark,—I am, &c.

JOSEPH GAMGEE.

ROYAL COLLEGE OF VETERINARY SURGEONS.

The Board of Examiners met on the 19th and 20th December, when the following gentlemen received the Diploma of the Royal College: — Dec. 19. — William Coles, Kilmersdon, near Frome; Thomas Brook, Balsham, Cambridgeshire; William Bennet, Souldern, Oxfordshire; Robert Elkington, Brandon, Warwickshire; William Dale, Stanmore, Middlesex; Luke William Walters, Stuckley-Beadle. 20th.—Robert Sharpen, Gresham, Norfolk; Forrest Barclay, London; William Falls Chisom, Cardiff, South Wales.

STATE OF SHEEP STOCK.—Considerable anxiety exists among flockmasters, particularly in England, as to the health of their sheep stock. The presence of the disease termed rot is causing apprehension that a very serious loss will be sustained among breeding-sheep during the ensuing months. Sheep kept on low-lying lands, and particularly where the herbage has been partially flooded, show unmistakeable signs of rot. In England, this scourge of the ovine race has occasionally reduced the number of sheep so much as to materially enhance the price of healthy animals. For instance, in the season of 1830-31, the estimated deaths of sheep from rot was between 1,000,000 and 2,000,000. By supplying turnip, oleaginous cakes, and grain, sheep partially affected can be fattened; and those not affected can be kept sound by a limited daily allowance of one or other of these foods. Stockmasters are, therefore, this winter and ensuing spring, required to bestow more than usual care upon their flocks.

OBITUARY.

DEATH OF MR BRACY CLARK, F.L.S.,

Member of the French Institute, &c. &c.

THE 16th of December, 1860, Mr Bracy Clark died at his residence, No. 18, Giltspur Street, London. This illustrious veterinarian had attained his ninetieth year, and it was only during the last few months that he manifested those symptoms of extreme old age which indicate the approach of death. We understand that it is but very recently that his eyesight at all failed him, and then the only evidence of its diminished power was afforded by his not reading the newspapers without spectacles. A vigorous mind in a vigorous body was truly exemplified in this the most renowned veterinarian that ever lived. That he was the greatest man our profession ever claimed as its own, is, in a measure, indicated by the high honours he obtained as a recompense for works of science of the very highest merit. Bracy Clark was first apprenticed to a surgeon, and on the occasion of Vial de St Bel dissecting Eclipse, Henry Clark was at Canons, and became impressed with the importance of the veterinary art. He urged his brother Bracy to turn his attention to it; and the advice seems to have been taken, as

the latter entered the Veterinary College doors, when first opened, leading in hand the first horse that was ever within its walls. He did not at this time enrol himself as a student, but very shortly after, as proved by the fact that he obtained his diploma on the 5th July, 1794. He was a great admirer of St Bel, a warm friend of Bond, Moorcroft, and others, who gave evidence of unquestionable ability in their chosen calling. It is well known that, in after years, he approved less of Mr Coleman; and it is due, probably, to the want of cordiality between the two, that the profession, for so long taught by Coleman, has learned so little of Bracy Clark's intrinsic worth. He was early appreciated in this country as a naturalist, and was honoured by the Fellowship of the Linnæan Society. Abroad his researches were fully valued, and he was created Member of the Royal Institute of France. Minor honours were heaped on him, but we find him on the list of Members of the Royal Societies of Berlin and Copenhagen, of the Natural History Society of New York, and of many more.

Bracy Clark's famous "Essay on the Œstri" was published in 1815. He afterwards gave to the world his elaborate work on the "True Structure, Laws, and Economy of the Horse's Foot." In 1824 he published the most erudite "History of the Veterinary Art" that had yet been given to the world, though condensed into 55 pages. In 1835, his treatise on the "Bits of Horses" appeared. In 1839, Bracy Clark published a "Memoir on the Vices of Horses," possessing great intrinsic worth, though with this note, "The following essays on vice in horses, are thrown together as an endeavour at a rough foundation for a more consistent consideration of this necessary department of horse knowledge." In the same year a very able series of papers were written, under the title of "Disorders of the Foot." We purpose publishing an extended Memoir of the Life and Writings of Bracy Clark, and we therefore do not refer to every subject his fertile brain and pen were devoted to. At various periods, before and after works already noticed, did Bracy Clark write his "Essay on the Knowledge of the Ancients respecting the Art of Shoeing the Horse," his "Short History of the Celebrated Race-Horse Eclipse," the "Pharmacopeia," and so late as 1859, did the "Fragmenta Veterinaria, or Scraps from my Memorandum Book," testify to the untiring perseverance, the devotion to veterinary science, and the profound learning of the subject of this brief and imperfect notice. Few men have had the privilege of working and writing, in true earnest, on any given subject for the length of time that Bracy Clark laboured in the cause of veterinary science. The progress in the purely scientific department of our profession, in this country, during the last seventy years, has been due almost entirely to Bracy Clark. The reputation of British veterinarians on the Continent is mainly attributable to his efforts; and we hope to show, by an extended exposition of his works, that his high merit, reflecting so much credit on our professional body, deserves a posthumous reputation far more brilliant than the fame he had acquired whilst living and working amongst us.

EDINBURGH VETERINARY REVIEW

AND

Annals of Comparative Pathology.

ORIGINAL COMMUNICATIONS AND CASES.

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Veterinary Education. By Joseph Gamgee, Senior, New Veterinary College, Edinburgh.

(*Continued from* Vol. II., p. 341).

I purpose proceeding with the further consideration of this subject; and conforming to what I deem advisable, I shall endeavour to point out how some of the influences of a false education imparted to veterinary students, as a whole, operate injuriously as regards the acquisition of knowledge in the art of shoeing and the prevention and treatment of lameness, as parts, and which form together a most important department of veterinary surgery. Before, however, devoting attention to any special part, I have a few words more to say on the general subject. Difficulties are not usually seen until they begin to encumber the course. Things as they are, seem all-sufficient until some fresh emergency calls for other resources; the man who, a quarter of a century ago, was a student at the veterinary college, and did his best among the foremost of his fellow-students, then succeeded in making a snug practice, or passing a career as army veterinary surgeon; such a man may not have found his knowledge overtaxed; prudence and integrity have stood him in much; and if he have not perceptibly enlarged the general stock of knowledge, he has at least taken care not to lose that which was conferred on him. We take the case of many such respectable members, who now have sons whom they desire to train to their profession. A generation has passed away since the fathers, in some cases by extraordinary efforts or accidental position, made their ground good in a profession; the sons are starting from a new point, generally supposed to be an advanced and more favourable one; now, however careful such fathers may be, they will find new difficulties arise as they withdraw their sons from school, and seek to place them on a sound footing, whence they can proceed progres-

sively in the acquisition of all the knowledge, theoretical and practical, requisite to make a proficient veterinarian. What is now really wanted is nowhere to be found, viz., a college to carry on the course from where the foundation-school left the pupil; one of several alternatives is had recourse to; all objectionable, expensive, and doubtful as to result. Nothing but exceptional goodness on the part of a young man will enable him to steer with tolerable success through such a maze. Some veterinary surgeons keep their sons for a year or two at home before sending them to a veterinary college. Parents not of the profession, and who can afford the expense, have recourse to an apprenticeship for their sons. This course has long been generally condemned as bad, alike in cases of aspirants to human medicine and the veterinary profession. It is said to be beginning at the wrong end—that is, by seeing some practice, without any principles or knowledge to enable a young man to profit by it. The apprenticeship system has been said to cut two ways, by taking up much of the best time of a young man's life, when he might at less cost have continued to pursue studies which would avail him more in after-time; instead of which, all he sees and does during the apprenticeship fails to inspire him well, or keep up the ardour with which he should go from his school to a good college. Though the apprenticeship custom is almost abandoned as it applies to medical education—and it has declined relatively to the reforms in universities and improvements in the medical schools—yet amongst veterinarians the custom holds most tenaciously; it has probably been on the increase, rather than on the decline, of late years. Assuming the above to be a correct view, it is well to inquire into some of the causes which have preserved the system from annihilation. One influence of attraction is the flattering prospects held out, by advertising and otherwise, to over-credulous parents and guardians. A fee, too, of a hundred pounds or more, forms a convenient item to help out the annual income of the practitioner, besides which, a youth is very handy to mind the premises and keep books; and pupils, as they are styled, give consequence to the establishment. It is also customary with young veterinary surgeons, when they start in a country practice, with little means and less to do, to advertise for a pupil, with premium of from one to two hundred pounds, to be paid in advance, the indentures to be binding generally for two years. In some such cases, to my knowledge, the young man has become so disgusted with what he has conceived to be the state of the veterinary profession, that he has never pursued it beyond the obligatory term of apprenticeship. There are other parents and guardians more intelligent and careful in the selection of practitioners to whom they bind over youths as apprentices; these have a notion that a respectable veterinary practitioner can and will impart a large portion of the knowledge that goes to form the future veterinary surgeon. It is time that another aspect of the question should be exposed; if veterinary science, and that of human medicine, could be learned as a linen-draper learns his trade, then perhaps the most

advisable course, in one case as well as the other, would be the apprenticeship; but they are so different, that the course which leads to success in the one case is generally bad, and totally fails in the professions. The linen-draper learns his trade, becomes acquainted with the texture and quality of goods, their value, making up parcels neatly—all such routine things that could be only learned at the counter. On the other hand, the aspirant to a knowledge of the veterinary art can hardly go a step in the same direction; to wrap up a paper parcel avails him little, and everybody can do it; to learn the fundamental principles of his profession, which should precede every other part of his labour as a student, he has no sufficient aids; and since the mind of an ardent youth will not remain untenanted, in the absence of right elements, it will take in trash; such a young man will be in danger of becoming a confirmed empiric. There are yet other causes to be noticed which tend to keep up a conflicting state of opinion as to how best to proceed or advise in the start to learn the veterinary art. There are defects in the construction of some of the bye-laws that were framed after the obtainment of the charter, which call for amendment; and probably at no distant period a supplemental charter will have to be asked for, in order to effect required reforms, such as experience and due consideration may point out. By accepted rule, the attendance at one of the veterinary colleges for two winter sessions is necessary to qualify the candidate for examination at the Boards of the Royal College of Veterinary Surgeons. A bye-law says that the candidate must have attained the age of twenty-one years before presenting himself to the board; to authenticate which, a certificate of baptism, or equivalent documentary evidence, must have been produced previously. Two winter sessions from beginning to end, eighteen to nineteen months, thus form the student's course, from which, however, may be deducted five or six months, viz., from April to October, during which time he is sent at large. This long vacation disjoints, as it were, the ridiculously short course, as we have before said. Since the age of twenty-one is that specified as qualifying for examination, and eighteen months from beginning to end is the time recommended and specified as embodying the two courses, it follows that a father must keep his son to the age of nineteen years and a half before sending him to learn his profession. As may be conceived, those two bye-laws so clashed that they could not work together; but since, as I believe, bad laws are worse than no laws at all, so these were fruitful in leading otherwise truthful men to evade the one by misrepresentation as to age, and the other would soon defeat itself; young men kept in monotonous suspense up to their twentieth year sometimes marry, and become themselves fathers, so that the contemplated course of studies has to be abandoned. Seeing after awhile that the two aforenamed bye-laws were incompatible, the one which required the mature age of twenty-one was first winked at, and then suspended, since I have not heard of late that it has been enforced. These little accommodations between schools and

examining boards have done nothing of real advantage to the student; the aim has merely been to disencumber the machinery, or else the wheels would clog. Since provision for the veterinary student's efficient education is so defective, that veterinary surgeons themselves have been unable to devise a proper course for their sons, how much greater the difficulty for those who have had no previous relation with the profession. I have thus pointed out some of the defects that stand in the way of the veterinary student's course, and which prevent veterinary science keeping pace with that of other professions in this country. As has been often said, it is easier to pull down an old house than to build up a new one, and that proverb applies to the present case. The work of reconstruction must be one of time, and can be done only by many hands; it should nevertheless be earnestly set about, or the saying of Sydney Smith will be verified, viz.,—that vicious systems, not yet a hundred years old, have hardly had time to attain full growth and blossom, much less to decay and leave room for new.

I have thus far discussed the question of education, with reference to more ample means being afforded at the schools for the veterinary student; if I have said little on the part essentially belonging to the student himself and his early advisers, it is not because I lightly estimate the importance of these; on the contrary, I believe that no radical and efficient improvement will prevail, but by the initiating influence and co-operation of students and their parents, and though last, not least, of public opinion also. It is well that one should bear in mind, when discussing the relative state of our veterinary schools, and the courses there pursued, with that of continental nations, that we possess peculiar and independent advantages over them. One distinguishing feature between the continental veterinary schools and ours is, that theirs are all under the direct control of government; much of the military element is incorporated in their discipline, they are regulated by fixed laws that cannot be evaded; we must work out our own course, and rise or fall according to our merit; this applies alike to schools and scholars, and in the long run, I have no doubt, will produce excellent fruit, as most English systems do, though some may take a time to get into working order.

In conlusion, I will offer a few words in reference to the principles and practice of shoeing, considering, as I do, that that branch is intimately interwoven with a sound system of veterinary practice. Though this is perhaps the most difficult part of the whole question in hand to deal with effectually, yet I shall none the less for that reason not evade its consideration. I believe that at no previous epoch since an English veterinary college was established was this branch of the veterinary art so difficult to approach with a view to its amendment.

There was a time when the great defects in the art of shoeing horses, and the sufferings and losses consequently resulting, were admitted. Efforts to improve the state were listened to, at least by intelligent men, but attempts at improvement were only partially successful, in many cases they were total failures. In the meantime, conflicting

opinions were propagated through the profession, thence to a great extent to the public, until at length, indifference, or rather incredulity in any of the so-called improvements; the working farrier especially, and not without some show of reason, exclaimed, "there is nothing like the old plan after all;" the result is, no established rules, though almost every practitioner pretends to have a system of his own, so we have all systems and presumptive opinions without rules.

There is one deep-rooted system of error, which had its origin in early mistaken notions at the outset of veterinary education, which I cannot refrain from noticing again, though by words or inference I have already frequently done so: this is the non-sufficiently blending together the art of farriery with veterinary science; instead of teaching and elevating the mind and improving the position of the artist, a line of demarcation was sought to be made by degrading him, calling him clumsy, ignorant farrier. I go the more freely into this point of inquiry, because I bring no charge against any individual; it involves neither personal nor party influence; it is one of those things for which no one is to blame, unless everybody is to be blamed for not infusing a better spirit. Assuming it, as I do, to be a fact, that the farrier's art forms an integral part of veterinary practice, it follows that every member of the veterinary profession has something to gain in self-respect at least, by helping to advance it to its merited consideration, and not only of that, but every branch of his art. As the man who lowers the character of his neighbour lowers his own, so the man to whom Providence has given larger views, either rises or sinks his own standing, in proportion as he improves or degrades those who are the chief instruments of working out his plans. This seems so palpably true, that examples need scarcely be adduced; taking, however, the cases of our army and navy: when either of these obtain a great victory, the nation, with one voice, proclaims its gratitude to the brave men of all ranks, and relatively those amongst the officers, through whose wisdom, energy, and bravery the merits of the men and the whole resources were brought to bear, come out in full relief. If, in drawing comparisons, I seek such high examples, it is because I believe the subject in question second to very few as regards its importance; I am, moreover, borne out in my views not only by public opinion, but I observe, that from the very highest individuals, honour is done to the hands by whose multiplied energy all work is well done. Whenever we see the cause of our army or navy brought before the assembled Houses of Parliament, and which is generally done by the highest authorities in command, the questions concentrate to considerations having regard to the efficiency of the men. I contemplate, on an early occasion, reverting to farriers and farriery—a most important question.

I venture to affirm that nothing pays so high an interest as learning, and since our stock in this branch of the veterinary art was low at the outstart, so it has given us little compound interest; oscillation, stagnation, and to some extent retrogression

have for some years past prevailed. The last twenty-five years have been fruitful of evil, in wrongly directing the veterinary student's mind to this branch of his profession. Some of his teachers have told him that it was a clumsy mechanical art, inconsistent with the calling of a professional man. Another fruitful source of evil arose and progressed from the very first establishment of our veterinary schools, in the not sufficiently attending to the education of the working farrier, in fact, in drawing too marked a line between the thinker and the worker; mutual good would have resulted by a freer exercise of the mind of the one and the hand of the other. At the present epoch I believe we should work at several points simultaneously; we must instruct veterinary students, and improve the condition, mental and physical, of the working farrier. In the confused and imperfect state of knowledge on the principles and practice of shoeing horses, sound rules may be defeated because not properly carried out; on the other hand, we may have all the desirable working ability in our farriers, and their ingenuity may be lost for want of proper cultivation and direction; all is at present in a disjointed state.

I have now, I think, reached a point at which duty calls me to be doing; deeds more than words are wanting. With that belief, I will proceed as I have begun, and in my sphere shall, to the utmost of my power, help the student; and in directing the workman, give him reasons for what I require to be done; relying on the success of my practice to inspire confidence in the soundness of my teaching and work.

Practical Memoranda. By A. C. Muir, M.R.C.V.S., Dunbar.

WOUNDS.

There are many simple cases which call for the application of proper surgical principles, which prove whether a veterinary surgeon is a sound practitioner more than serious and complicated diseases which he may be called upon to treat. In no department of surgery have greater improvements been made within the last few years than in the treatment of wounds, as we find that the veterinary profession is now here and there becoming more alive to the absurdities of meddling and employing very active measures, when simple means, in aid of nature's healing powers, can accomplish a cure. In illustration of the difficulties experienced in some simple cases, I may relate one of

Laceration of the Nose.—The subject of this injury was a thorough-bred mare, the property of Mr Peter Thomson, farmer, Auchtermuchty. On the morning of the 16th of February, 1860, I was requested to attend this mare, which, it was believed, had lacerated her nose during the night-time with a hook in the loose-box. The wound was jagged, and the nostril completely severed from the margin of the nasal aperture to the upper part of the false nostril. In snort-

ing, the flaps of the wound were opened out, and freely exposed the nasal chambers. I secured the mare in the trevice, as she was very awkward and restless. I then clipped all the jagged part, which I believed would slough away, and retard the healing of the wound if not removed. The edges of the wound were then applied to each other, and put in about a dozen iron-wire sutures at short intervals from each other. I requested that the mare should be turned in her stall, and kept day and night on the pillar reins. Next morning the appearance of the wound was most satisfactory, and I believed that it would heal by the first intention. I requested the farmer to keep the part cool and clean, by the occasional pouring over it a little cold water. This treatment was so beneficial, and the nostril looked so nearly healed on the second night, that the farmer turned the animal with its head towards the manger. The result of this was, that the animal rubbed its nose, removed the sutures, and the wound opened up, and had a worse appearance than when I first saw it. On the third morning I was called again. I then, for the second time, pared the edges, introduced the metallic sutures, and insisted on the animal being turned in its stall. The third day I saw it, and healing by the first intention had gone on as rapidly as it could. This again so assured the attendants on the animal, that from mistaken kindness they allowed the animal back again into the stall. This time a considerable portion of the wound was so thoroughly healed, that no rubbing could sever it, but at the free margin of the nostril a portion gave way, which I had afterwards considerable trouble with to obtain a good cicatrix.

Remarks.—This case is one which proves certainly how much the owner of, or attendant on, an animal may favour the veterinary surgeon's operations. By using the metallic sutures, carefully removing sloughing portions of tissue, approaching the lips of the wound thoroughly, and ordering the animal's head to be tied up, I ensured every condition for a most satisfactory issue. This was prevented; and, as I have heard Professor Gamgee state in his lectures, it is the period when pruritus accompanies the process of cicatrization that care should be taken in protecting a part, to prevent an animal injuring itself. I did this to the best of my ability, but was frustrated to a certain extent by the farmer.

Extensive Lacerated Wound of the Haunch.—A cart mare, five years old, the property of Mr Bell of Glen Tarkie, was found one morning during last spring to have sustained a very severe lacerated wound of the haunch, which extended from the anterior part of the gluteal region to a point below the tuberosity of the ischium. So deep was the wound, that the several ends of the fibres of the triceps were all turned upwards, and gave a peculiar gaping and jagged appearance to this wide lesion. No reasonable conjecture could be formed of the cause of such a gash, and Mr B. feared that it had been viciously inflicted with an axe by some malicious person. I at once washed the wound most carefully, and with a pair of scissors removed

all loose portions of texture, which must have been thrown off by the tardy process of sloughing. Though I believed that extensive suppuration would occur in the process of granulation, I introduced several metallic sutures, and covered the wound with a cloth, ordering at the same time that it should be constantly damped with cold water. The farmer wished to know why I did not adopt the good old practice of stuffing the wound with tow and turpentine ; I simply answered that such treatment would both injure him and his mare. By perseverance with the cold-water dressing, and keeping the animal perfectly quiet, with her head tight to the rack for several days, I had the satisfaction of observing rapid closure of the wound, and within three weeks from the date of the accident the animal was working in the plough.

Accidents resulting from placing a Boar amongst Cattle in a Straw-yard.—On Sunday, the 21st of October, 1860, I was sent for, about eight o'clock in the morning, to attend the cattle of Mr Thomas Landale of Colzie, which had been severely mangled by an old boar. The animal had inadvertently been allowed to run amongst the feeding stock, and his tusks had not been removed. These organs of defence were most powerful in this animal, and severe weapons they proved on the occasion I am referring to. From some circumstance or other the boar grew savage, and boldly attacked ox after ox with as much fierceness as any wild animal of the same species. He dexterously ripped up any part he could approach, whether on the legs or belly, and, in some cases, deeply into the sides of the chest. Ten oxen had thus severely suffered from the violent assault, and though many of the wounds were deep, none penetrated either the abdomen or thorax. The worst wound was one which implicated the thigh, and situated near the stifle joint. In this case great inflammatory swelling occurred, and I was compelled to make a long and deep incision, and treat the animal constitutionally, from the severe irritative fever which set in. I bled it from the jugular vein whilst lying, suffering the most intense agony. Other wounds on the other cattle were deeper and wider than the above, but none so painful and dangerous in appearance. I feared that the savage animal had really inflicted poisoned wounds, especially from the rapid and extensive swelling which ensued the injuries. This led me to wash and syringe the wounds with warm water. I freely applied tincture of benzoin, which in some parts I injected, where the wounds were deep. I ordered the persons in attendance on the animals to continue fomenting with warm water, and soon suppuration commenced from the wounds, which were intolerably fetid three or four days after they had been inflicted. By cleanliness and continual bathing, granulation speedily advanced. I applied a mild sulphate of zinc and chloride of zinc lotion over several of the wounds, and, in a period varying from three weeks to a month, they were all healed. I may mention, that the first day I administered to each of the animals a dose of purgative medicine. In the worst case above mentioned, I used poultices as well as fomentations, and with the best effect.

Contributions to Veterinary Jurisprudence. By James Horsburgh, M.R.C.V.S., Dalkeith.

Tricks of Dealers.—Every person at first entering on the duties of a veterinary surgeon, notwithstanding that he has availed himself of the advantages of close study, and acquiring experience in every way in his power, must meet with some difficulties. Not the least is that incidental to the inquisitiveness of people who ask for information on a variety of topics, and try the skill of the junior practitioner by some awkward case of lameness or other. This is apt to perplex the young man on commencing practice, and he may become more than guarded in giving his opinions; he finds himself obliged to learn men and their manners, and more particularly the manners of those who can make good or bad use of a veterinary surgeon in their trade, viz., horse-dealers.

Horse-dealers, at all events a large proportion of them, judge the men they deal with with as keen an eye as they do the animal they wish to buy or sell. Various other circumstances are attended to in their transactions. Thus, in purchasing from persons far away from his own abode, a dealer adopts a peculiar stratagem to reduce the price of an animal that he may have bought even cheap. The system carried on may in simple Scotch be termed the "bit letter system." Thus the person who has sold a horse to a dealer living at a long distance, is marked by the latter as a fit object for his special plan of operations. The horse is paid for and consigned; a fortnight elapses, at the expiration of which the seller receives a "bit letter," saying that the horse he had sold on a certain day, &c., was lame, useless, and must be taken back and the money returned, or legal proceedings will be immediately instituted for recovery of the price of an unsound animal, which the vendor had warranted sound and free from vice. The seller, unaware of the trick being played on him, though confident that his animal is sound, the best he ever had, and perfect in every respect, may be afraid of the strong and doubtful arm of the law, and perhaps sends five or ten pounds to the dealer to hush the matter up. In illustration of this system, I may relate one or two characteristic cases:—

A very good black harness mare, belonging to the late Marquis of Dalhousie, had been standing unused for near twelve months. Mr Main, the factor at Dalhousie Castle, requested me to examine her, and see if he would be justified in warranting her sound, as he was going to sell her. I thought she was sound, and she was sold as such in Edinburgh to a Glasgow dealer. Eight days after Mr M. came with a letter in hand, calling out, "We are all wrong—all wrong together; that mare is all lame; she must be taken back or eight pounds paid, or immediate prosecution." I examined the letter. It was no doubt threatening; but asking for certificate, there was none. I advised to take no notice of the letter—he would get another; but on no account to answer any till I saw them. Mr M. demurred consi-

derably; would rather pay back some money than go to law; but being only the dealer's own letter, no expense could be on it. Eight days after, another "bit letter" came. As the mare was "*like useful,*" five pounds would be taken; but no answer was allowed. Eight days more brought a *furious* note, stating that the mare was at livery at Mr M.'s expense and risk; and, as he had the impudence to treat letters with disdain, a warrant would be obtained from the Sheriff, the mare sold, and immediate prosecution without mercy. I advised that a party should be sent to see if the mare was there, have her examined, and if wrong, to take her back, or otherwise agree. Mr M. was going to Edinburgh on some other legal business, and, mentioning the case to the law agents, they had some acquaintance near the place where the mare was said to have been placed at livery; the letters were sent to them; they took witnesses and went to the stable, but the mare was not, nor ever had been there. On close investigation being made, she was found in possession of a gentleman; had been purchased, the day after she was sold in Edinburgh, for ten pounds more than the dealer had paid for her; and was pleasing her owner in every way. A charge was immediately made on the dealer for ten pounds expenses; if not immediately paid, his letters would be given to the Sheriff as attempted fraud. The money was immediately paid.

The foregoing is not a solitary instance; and, for many years, the common practice in this part of the country was to threaten proceedings, on a certificate obtained from Professor Dick. It frequently turned out that the horse was mentioned in the certificate simply by colour, and as there are many bay, or grey, or other coloured horses, one certificate might serve for several cases. Moreover, it turned out in time that, as some persons have never adopted the plan of particular marks, they condemn a horse as unsound at one time, and shortly after as sound, and this even in cases of incurable disease, such as spavin and corns. To the profession, it is of great importance that a method should be adopted to prevent any blunders which are apt to bring discredit on it.

Similar to the case mentioned as occurring to Mr Main, is the following:—A horse-dealer was commissioned to purchase a horse for Mr Ainslie of Peaston. One was bought at Newcastle, conveyed to Dalkeith, and delivered, at a handsome profit, to Mr Ainslie. The "bit letter" was sent, followed by threats, and a certificate from a veterinary surgeon. The person who had sold the horse at Newcastle took the train, and rapped at the dealer's door one fine afternoon, saying, that he had come for the unsound horse. The state the dealer was in may well be imagined, and he had to pay expenses of travelling, &c., and thought himself lucky to get off as easily as he did.

Cachexia Ossifraga—The "Cripple."

By THOMAS SARGINSON, jun., Appleby, Westmoreland.

ALTHOUGH using this term as the title of my subject, I do not consider it to give an idea of the exact character of the disease I am about to describe, but merely to convey an impression of a very prominent symptom of the disease. As many other maladies existing in different localities, this one is very indifferently treated of in our veterinary works. The inefficiency of our works on cattle medicine is sufficiently apparent to the practitioner, who, after a nominal term spent at a college, enters into the world a sufficiently-educated person, as his diploma gives him to understand; but how frequently is he wofully disappointed when called to any of the several enzootics in cattle, which he finds have not been treated of, perhaps not mentioned, either at college or in books. The present subject is one, amongst others, which is not discussed in our British works on cattle medicine. It is a disease very prevalent in many districts I am personally acquainted with, and in all of which it passes under the very expressive name of "Cripple," the appearance of the animal fully confirming the term. It seldom happens that a solitary case occurs on a farm which is subject to it; for all the milch cows, and perhaps some of the younger stock, are more or less affected by it. Such farms are considered to be of much less value than other places on which it does not occur, not only from the unthrifty condition of the stock, but also as regards fertility, as they are never found to be very productive, and, amongst farmers, they pass under the cognomen of "crippled places."

The disease will never be found to exist on farms that are fertile and rich; in fact, a certain guide to the *locale* of this affection is to look out for farms that are situated on high lands, possessing stunted hedges and trees, a barren, or, at least, a poor soil, producing a dry, short, and innutritious herb. On passing over the farm, the limestone rock will most generally be seen to project out of the soil, proving that it is situated on the limestone; or, by examining the rivulets, if any, that flow through the farm, the water will appear to be beautifully clear and transparent, so that the smallest pebble may be discerned on its bed. There is also, in the generality of instances, the limestone rock forming its bed. Where this is present, any old farmer will tell you that the water which seems to be so limpid and pure is "hard," and that the cattle confined to it are *certain* to be "crippled." I have, however, noted farms, where the water which supplied them was charged with carbonate of lime, and still no "cripple" exists on them. This is undoubtedly owing to the character of the soil, which, on examination, is found to be loamy and free, and laying on the red-sandstone rock. I have also noticed "cripple" prevailing on farms supplied with water running over mosses, &c., which, from the experience of intelligent farmers, has been said to be antagonistic to this affection. This, in my opinion

is caused from the character of the soil proving to be of an undoubted calcareous character, intermixed with clay. Although it cannot be doubted but that the water supplying farms impregnated with any principle of an injurious character, will have an influence in the production of disease, yet, in the instances quoted, it appears that the character of the herbage produced on such farms either counteracted the injurious influence of the water, or, on the other hand, destroyed or overbalanced the influence of the mossy water.

From what has been stated, it will be seen that the "cripple" will and does exist on those farms where the soil is calcareous and clayey, and that it is evident that such soils are incapable of producing a succulent and healthy plant; in fact, will the herb not be surcharged with calcareous and silicious elements? and is there not a deficiency of azote-producing principles? As it is well known, that where nitrogen abounds, a luxuriant herbage is the result, we need go no further in support of this than a farm on which an abundant supply of its manure is spread, how much more abundant and luxuriant is the character of the vegetation from the use of decomposed vegetable matter and animal excretæ than from anything else. If, therefore, the herb grown on these "crippled farms" be unhealthy, as there is little doubt, the animals partaking of such will, without doubt, in the course of time have their systems seriously deranged, and the character of derangement will depend either upon an insufficient supply of nitrogenous material, inducing, consequently, emaciation and pure debility, or it may be that, where this deficiency of azotised material exists, the earthy salts may not exist in an abnormal degree, but still, from a want of other nutritious material to counteract their ill effect, the system may become charged with them. When the herbage and other produce of the soil is charged with earthy salts, whether carbonates or silicates, they would, in all probability, become assimilated, or, at least, there would be a tendency to the deposition of these salts into the various textures, such as the cartilages, ligaments, and cardiac valves, &c., all of which lesions are apparent to a greater or less degree in all the animals which have died of this disease that I have examined. Some are of opinion that it is owing altogether to an excess of the carbonate of lime in the soil and waters; but, if this were the case, the character of the farm could not be altered, nor the disease be removed, as has been done, and which will be noticed hereafter. It is most probable, at least, as far as my humble opinion goes, that it is induced from the combined influence of poverty in the soil, and an excess of astringent salts, silicates, &c. When I refer to the poverty of the soil, it must not be understood that I mean an exhausted state of the soil, because many of those places have not been broken up with the plough to any extent. Many farmers are of opinion that the labour and expense required in the cultivation of such lands would not be compensated by their produce. If it were turned up

by the plough, the advantages it would derive from exposure to the atmosphere and rain-water would be considerable.

There are many farms which are termed "crippled farms," and many cattle called "crippled," which are really not so. The mystery of this is easily explained. On strict inquiry you will find that the reason the stock display so many of their bones, and walk so stiff, is owing altogether to imperfect feeding; it answers as a good excuse for the farmer who overstocks his farm, and is thus compelled to allow short rations, to say, that it is the "cripple" (or other name it may possess), that is the cause. The climate will, without doubt, have a great influence in modifying this disease, as is shown by its greater severity in form on those lands that lie the highest, where the protection is scanty from the inclemencies of the seasons. A fact connected with this affection is that, when cattle are taken from those farms which are subject to it, even when suffering severely from it, to farms existing on the eastern banks of the river Eden (which flows through the vale of Westmoreland), they recover completely from its effects, and are perfectly free from a recurrence of the attack if they remain in that district. It is a common saying amongst farmers, that "there is no cripple on that side of Eden." The character of these farms that are free from the affection, is essentially different from those afflicted with it; they have a free, sandy, and rich soil, producing excellent oats and rich meadow grass, but their climate is colder, owing to their being situated near to a range of mountains; but if the cattle are brought on to those farms situated on the western bank of Eden where the "cripple" prevails, they soon begin to show the symptoms of an attack. I do not include all the farms on the western bank, as some are perfectly free from it. From this instance we may again be led to infer, that the herb and water to which they had been previously subject, were not sufficiently nutritious, or else impregnated with some injurious matter, because, on removal to farms producing a superior herbage, they have recovered, sometimes in an incredibly short time for the sad state they were in. On all these "crippled places," cows that yield a great quantity of milk are the soonest attacked, and the farmer knowing this, will not take such to his farm, because he would soon have to "dry" them, or they would rapidly fail; but animals that have been reared on these places are less liable to its attack, and are seldom so severely afflicted by it. Many have confounded this affection with rheumatism, but it is, without doubt, a distinct disease in character, as in no case of "cripple" will be seen the acute symptoms and fever which exist in both the acute and chronic forms of rheumatism; in those cases where suppuration exists in the joints, and the limbs even rot off, it is in my opinion produced from the friction of the joint from ossified cartilage, and an evident deficiency of synovia, these inducing a local inflammation altogether differing from the peculiar characteristics of rheumatism; and, unlike it, the osseous system seems to be the principal seat of disease.

Some cattle evince a greater predisposition than others to an attack,

as the elderly cow and the cow that yields a great quantity of milk. I have never noticed young calves become affected by it. Some have stated them to have been so; but, on inquiry, it has been found to be pure arthritis, or joint-felon, from cold and damp houses; whilst one of the stock of calves has been so afflicted, the others were perhaps perfectly healthy. The symptoms vary in degree of virulence on different farms. Some farms have a very slight attack, whilst others are very severely afflicted with it; but the symptoms will vary frequently on one farm, as, on entering a cow-house with a collection of "crippled" cattle, it will be seen that some are slightly affected, whilst others are evidently suffering greatly. The disease being of a sub-acute character, the period from its first appearance in an animal to its last stage occupies frequently some years, according to the vigour of their constitutions, and the mild or severe form of the disease. Thereis one farm I am acquainted with, where the owner is compelled to change his stock every two years, to prevent heavy losses occurring.

In the primary stage of the disease the animal presents a lean, emaciated condition. The bones in every part of the body are prominent, the skin is tight, hard, and void of all suppleness—the hair presents a coarse appearance, standing almost straight up, having none of its naturally smooth character about it; but if we see our patient walk, it will strike us that there are no joints in her limbs, as she is peculiarly stiff, knocking her hock-joints up against each other without any regard to the unstateliness of the gait. She will also, whilst walking, make an extraordinary cracking noise, showing an insufficiency of synovia to lubricate the joints—the pulse on pressure feels flaccid, but the calibre is rather increased than diminished—rumination is performed rather slow and sluggishly—appetite is not indifferent, eating her hay, straw, or turnips, with a degree of zest. If we allow her to come in the neighbourhood of the hedge where the farmer's wife has displayed her linen, she will indicate the phenomenon of bulimia or depraved appetite; she will seize with avidity the first article she reaches, and chew it with wonderful pleasure; she will also hunt with avidity, any sour or filthy liquids, even human urine, and drink them greedily—and when in the pasture, will pick up a bone, if such can be found, and chew it for an hour at a time, seeming to enjoy the occupation. Stones, iron, sticks, clothes, &c., are all alike objects of attraction to her. This peculiar habit is attributable, I should think, to acidity of the stomach. The farmer imagines that a sod, cut from a field, and placed before her, will palliate her affection, and the cow, to appreciate his kindness, commences to lick it, and even to devour the soil that is on it. I have noticed them chewing these different articles, and never saw one display any anxiety to swallow the object, but merely a desire of chewing. When such articles are swallowed, it will, I think, be more an accident than intentional on the part of the animal, but I cannot be positive on this point—they show a particular desire to chew articles of clothing, as is testified by a person going to the stall-head between two of them. They will immediately seize

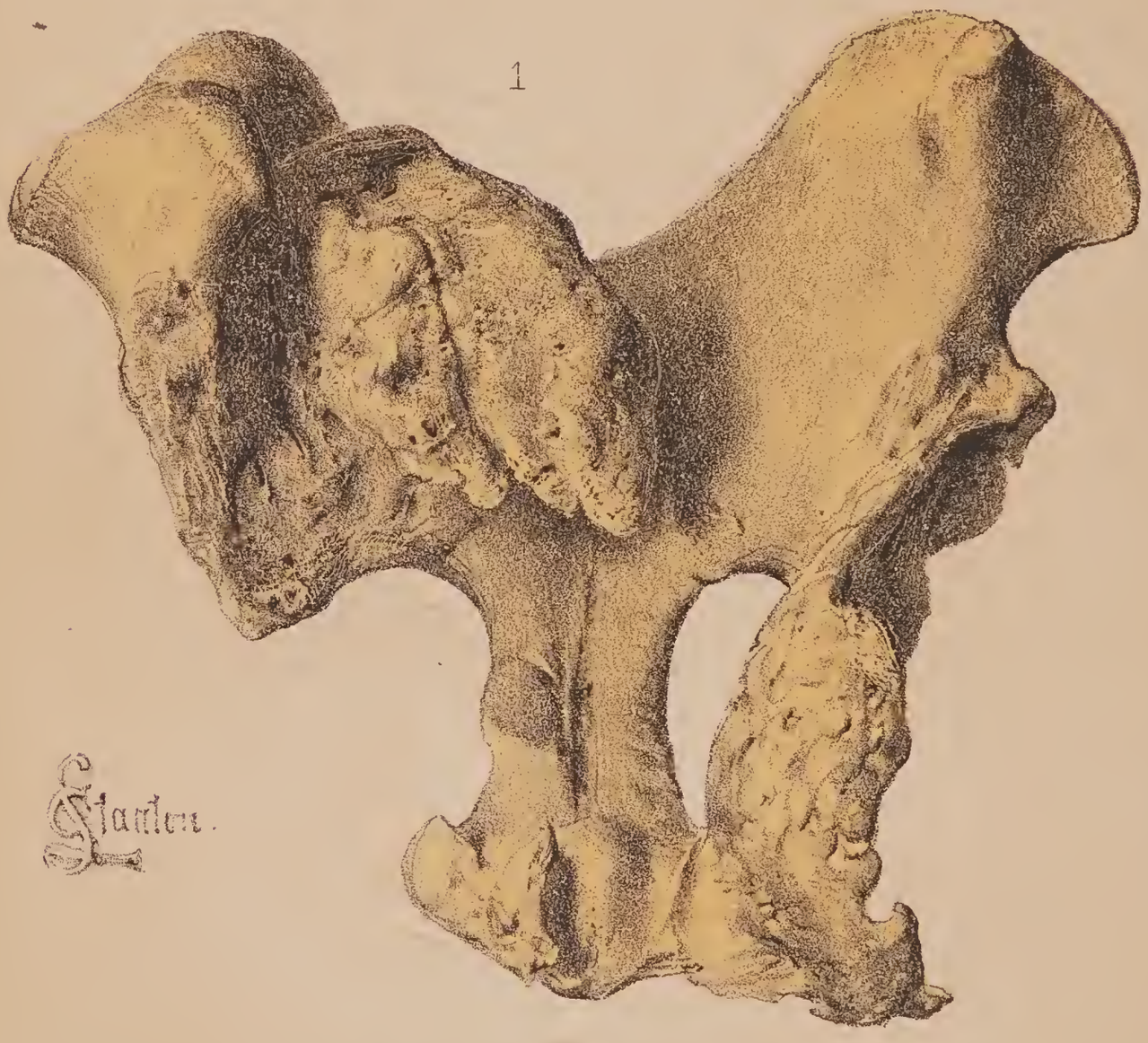
his dress and chew it. The bowels are always more or less constipated, and the secretion of milk is partly checked, although but slightly. They may continue in this manner for a longer or shorter period, according to constitution and external circumstances, before they display any of the worst symptoms concomitant on the termination of the disease. It is a gradual declining from the primary symptoms to those of a more fatal character; these may be marked by the appearance of tumours over the hip or stifle-joints, or perhaps a tumefaction extending from the stifle to the hock-joint, which in the course of time suppurate. In the meantime, the system, it is evident, is sinking—the pulse is flaccid, but still retains its calibre, although accelerated—appetite is impaired, and the rumination is performed very lazily—constipation—if a milch cow, the milk is now wholly suspended, or nearly so—if perchance the animal has swallowed any irritating or indigestible substances, which is almost always the case, the symptoms of indigestion will be more severe, with perhaps an intermittent pulse, great lameness, increasing to such an extent, that the animal is either unwilling or incapable of rising, or perhaps, on closer examination, some bone will be found to have become fractured, either the scapula, femur, or the os innominata, or it may have occurred in any other, as there is the same tendency in all the bones to fracture, although the animal is fastened up in its stall, and therefore, not subject to any of the ordinary causes of fracture.

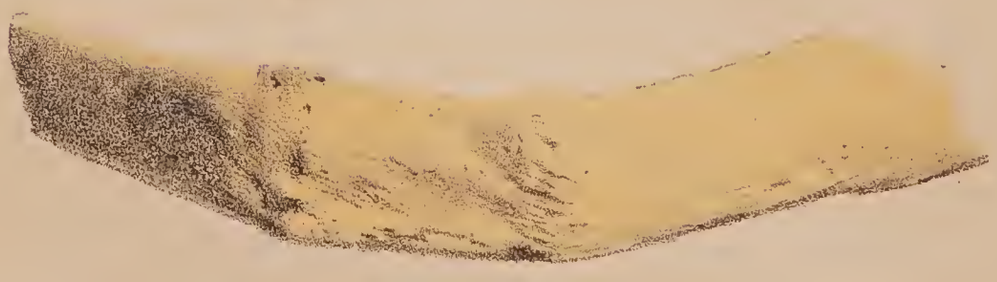
I recollect a case to which we were sought, in which the animal could not stand. On examination, it was found that the radius and ulna were completely fractured. Next day, the scapula and the femur were broken; in fact, one after the other, all the bones of the limbs became fractured, until the animal died from the extent of irritative fever set up, consequent upon the fractures. Another instance of this brittleness of bone:—A milch cow was purchased as perfectly sound. She was poor; and the excuse was, that she was rather "crippled." A fair price was paid on taking her. She walked to her new home extremely stiff and lame. Next morning I saw her, and found the os ilium fractured, afterwards the femur broke, and she died. In the greater part of cases, the brittleness of bone is present; and in such I never noticed any suppurative tumours, excepting some cases where the joints were affected and opened from local inflammation. On examining some cases after death, I found attenuation of muscle, bones peculiarly polished at their extremities, and brittle. In some very rare cases exostoses may be noticed on the body of the bone, but such are scarce. On the epiphyses of the bones, however, they will frequently be found, more especially at the lower extremity of the tibia, sometimes they have existed to such an extent as to anchylose the hock-joint. In all the articulations is an evident deficiency of synovia, the different articulatory cartilages displayed an undoubted tendency during life to the deposition of osseous matter in them, as all of them possessed a degree of hardness inconsistent with nature. In regard to prevention, it will be evident

enough, that the removal of the animal from the innutritious farm to one of a richer and more luxuriant character, will be attended with the greatest benefit. Many cases have been recruited, even when the animal has been compelled to lie and eat.

An important fact I wish to mention here is, that there are some two or three large farms in this neighbourhood which were formerly severely afflicted with this disease, but now, since they have become possessed by enterprising agriculturists, the disease is much abated, in fact, proving a very rare visitor, although these farms possess the characteristics previously described as "crippled places," and were in fact situations where this disease prevailed to a serious extent; the means which have been resorted to by these men were, irrigation and extensive use of artificial and other manures on the farms, thus altering the character of the herbage, as it is not only more luxuriant, but evidently of a more succulent and nutritious character; they also cultivate a good quantity of the mangold wurzel and linseed for consumption by the stock; these articles were never known on the farms whilst suffering from "cripple." These means have evidently produced a wonderful effect, as they are seldom if ever afflicted with it. As the disease is found to be worst during the autumn and winter seasons, when the cattle are brought in to dry food, the necessity of a succulent diet is obvious; but still I have seen many bad cases during summer on farms where the soils were calcareous or clayey. Where there is a scanty supply of turnips; and where oil-cake, or other of these useful articles of diet, are scarce, the "cripple" will be the most severe. In a word, to prevent it, soft nutritious diet, as turnips, mangold wurzel, oil-cake, &c., must be resorted to, and the hay or straw with which the animals are supplied, should not be the stunted and dry material which is produced by those lands on which the "cripple" is known to exist, but such as is produced by the plentiful use of artificial and other manures, to counteract the tendency of the soil to produce a dry and stunted herb. The use of crushed oats and barley, along with other nutritious food, will, in the course of time, have a very beneficial effect also.

When the practitioner is sought to a case of confirmed "cripple," where the preventive means have not been resorted to, it will be necessary to employ more active measures. Many remedies have been tried with more or less benefit, according to the advancement of the disease, where the cachexia ossifraga is so predominant, and one bone becoming rapidly fractured after another, the case may be looked upon as altogether hopeless; but in those cases where the tendency to fracture is not so great, the animal may be recruited most generally. In recommending remedies for a disease possessing different phases, it is necessary to apply those means which seem most applicable to the *one* particular case in hand. Many disappointments have originated from the reported ccess of a particular remedy fromsu parties who, no doubt, did succeed with it; whilst others, without taking into consideration the modifications of the disease, ruled by





CACHEXIA OSSIFRAGA

Fr Schenck Lith^r Edinburgh 50 Geo.St

circumstances, climate, &c., have unmistakeably failed, although the same remedies may have been employed, thus showing that one remedy may succeed admirably in one district, whilst in another it is sometimes nearly useless. The means which I have seen applied with success, according to the modification of the disease, were, in the cases where the attack is primary, the use of malt ale, administered in pint doses every night, for a length of time. Water accidulated with sulph. acid. dilut., or with nitric acid, allowing the animal no other water to drink, excepting this; also administering the acid. sulph. dilut. twice daily, and where constipation is threatened by its use, it must be obviated by a laxative diet. Hydrochloric, as well as nitric acids, have been used, but the preference is given to the sulphuric. Sulphate of soda in $\frac{1}{4}$ lb. doses, combined with vegetable tonics, will sometimes be found useful. Camphor in large doses, combined with tonics, given in cold ale instead of gruel, have been attended with good success; also the use of a decoction of the willow or poplar barks given in pint doses, will be found an admirable tonic for the cases of advanced "cripple." As to the use of sedatives, the animal rapidly sinks under their influence; the only class of medicines that have been the most successful, have been tonics. There are many cases of chronic rheumatism and arthritis that have been confounded with "cripple;" but any one acquainted with these diseases, will readily recognise an essential difference between them. But, in fact, every remedy will be comparatively valueless unless the animal be put upon a more nutritious diet—a diet free from astringent qualities.

Cachexia Ossifraga—The Stiffness. Remarks on Communications by Messrs Thorburn and Sarginson, with Description of Specimens. With a Plate. By JOHN GAMGEE, Professor in the New Veterinary College, Edinburgh.

IMMEDIATELY after the appearance of the last number of the *Edinburgh Veterinary Review*, another of my students, Mr Sarginson of Appleby, wrote to me, stating that the stiffness was a common disease in Westmoreland, and known by the name of "Cripple." In accordance with a desire expressed by me, the readers of the *Review* have a very interesting essay on the subject, to bear out Mr Thorburn's observations, and rendering it a matter of surprise how so remarkable a disease should not have been hitherto described by British authors, or contributors to veterinary periodicals. I may incidentally state that, in the course of my lectures, when I have had occasion to allude to disorders, an account of which could only be obtained from continental authors, I have impressed on my students that, if our professional brethren in this country have not noticed them, such diseases

may be found to exist, and some may hereafter be imputed or observed by our veterinary surgeons in foreign climes. The disease at present under consideration, and regarding which German authors furnish most elaborate essays, was one that is often referred to in that manner; and another, the "stallion's disease," an eruption of the penis, with the manifestation of symptoms similar to glanders, which has been referred to as occurring in Prussia, has been seen in England and Scotland; and a practitioner in Stranraer consulted me, four years back, regarding several cases of this affection. I hope, if veterinary surgeons have observed the "stiffness" or "cripple" in any other districts than those already mentioned, that they will communicate facts to us regarding it.

In the last number of the *Review*, I referred particularly to the symptoms of the disease. They have been again described by Mr Sarginson, and I have only to draw special attention to the apparent rheumatic character assumed by the disorder. Mr Thorburn particularly drew my attention to the swelling of the joints, and enlargement, with softening, at different parts of the bones. A superficial examination of some of the diseased parts of the bones he sent me would lead us at first to regard the swellings as due to a provisional callus. This is particularly observed at fig. 2, Plate I.; and fig. 3 would indicate the perfect consolidation of a pre-existing fracture. Mr Thorburn, probably with justice, regards the swelling on the rib as a soft growth or exostosis. The appearance of tumours is sometimes accidental, as evident by the projecting growth on the inside of the acetabulum, shown at fig. 1. This peculiar condition arises from the head of the femur having passed into the pelvis, breaking into the cavity the portion of the innominate bone which enters into the construction of the acetabulum. In order that this should occur, softening, degeneration, and fracture are observed simultaneously.

This particular lesion is evidently very frequent, and of material importance, as occurring in cows, from the closure of the pelvic space, and impediment to the birth of a calf. The limbs have been said to rot off, by Mr Sarginson, and this, in a general sense, satisfactorily expresses the manner in which the limbs are fractured.

Space compels me to limit my observations this month to the chemical changes occurring in the diseased bones. I shall next consider the anatomical, and especially the morphological deviations from the healthy state, preparing us for an explanation of the causes and nature of the disease. So far as the chemistry of the disease is concerned, it would be necessary to analyse the blood and flesh of affected cows. The bones have been examined, and I am indebted to my brother, Mr Arthur Gamgee, for the following:—

"A quantitative analysis of the bones was made, the result of which is given below. No great deviation from the normal composition existed, as may be seen by comparing the analysis made by my brother with one by Von Bitra, of the healthy frame of a bull. Traces of

iron were found to exist in the bone, which was owing to the bones having been macerated in an iron vessel.

	Diseased Bone.	Healthy Bone (Von Bitra).
Organic constituents,.....	56·50	31·00
Phosphate of Lime, with a little Phosphate of Magnesia, and Fluoride of Calcium,.....	51·90	55·49
Carbonate of Lime,.....	9·80	12·71
Soluble Salts,.....	1·80	0·80

Biographical Sketch of a Great Veterinarian.

By a CORRESPONDENT.

BRACY CLARK, ninth and youngest child of John and Hannah Clark, was born on the 7th of April, 1771: he received his distinctive name in commemoration of his paternal grandmother, Margaret Bracy, the last representative of an ancient Norman family of that name, settled at Long Compton, in Warwickshire. His father, a member of the Society of Friends, was a highly respectable tradesman of Chipping-Norton, in Oxfordshire, engaged in the leather trade and a mercery business, and the possessor of land in the town and neighbourhood. He died at the age of forty-four, in consequence of being injudiciously bled, according to the ignorant practice of that time; his much-attached wife survived him but three months, dying, it was believed, of a broken heart, owing to her bereavement. Thus before he was two years old, the subject of our memoir became an orphan. At the age of eight he was sent to a large school at Burford, in Oxfordshire. It was kept by Thomas Huntley, who enjoyed considerable reputation for his latinity, and succeeded in infusing a taste for the classics amongst his pupils. Luke Howard, the distinguished meteorologist, and Sampson Hanbury, were Bracy Clark's cotemporaries there.

At the age of fourteen he left Burford school, and was apprenticed to Mr John Thresher, a surgeon at Worcester, who died about a twelvemonth after; the business was purchased by a Mr Field, with whom he stayed till the expiration of his apprenticeship. His master became much attached to him, and they studied Greek together, by reading the New Testament of an evening; this study he considered of great advantage to him.

The general practitioners of that day had more to do with pharmaceutical processes than is commonly the case at present; and some good formulæ in Bracy Clark's veterinary pharmacopœia may be traced to his Worcester laboratory. He was much interested in the growing science of chemistry, then encumbered with the doctrine of phlogiston. Bracy Clark studied practically, and one of his friends still possesses a specimen of phosphorus which he produced during his apprenticeship. These pursuits not only turned his attention to

stoves and furnaces, in which he afterwards took great interest, but developed his taste for mechanics in various ways. He constructed ingenious machines, and worked with an air-pump, which he purchased himself.

At this time his turn for mechanics began to develope itself; he constructed various ingenious machines, and made scientific experiments. He was led to the pursuit of natural history by a neighbouring apprentice with whom he used to go out entomologising. On one occasion, having been very successful when his friend was not with him, carrying the insects to him in triumph, he was mortified at the other refusing them as common things which he possessed already. Upon this Bracy declared he would make a collection for himself, and his natural assiduity enabled him soon to leave his friend far behind: he began the arrangement of his prizes according to Berkenhout's *Synopsis*, but some time after obtaining a copy of the *Systema Naturae* of Linnæus, he became enraptured with his nomenclature and classification, and remained his staunch adherent through life, so that his cabinet of insects was often visited by entomologists to verify doubtful specimens: into this cabinet he admitted no insects but such as had been described by Linnæus.

The environs of Worcester abounded in natural productions of all kinds, and botany was soon added to the other occupations of his spare hours. These tastes were afterwards the means of introducing him into refined and literary society. It happened that a rich gentleman of some distinction was visiting in Worcester, who, after having been shown all its objects of interest and the beauties of the vicinity, observed: "Among your sights I think there is one you cannot produce—a collection of the insects of the locality." "Perhaps we can satisfy you even in this," said his friends, and they sent to their surgeon's apprentice. Mr Mark Phillips, the gentleman in question, was so surprised and delighted with the youth's indefatigability and painstaking arrangement, that he mentioned him to Mr Marsham, the secretary of the London Linnæan Society. Before he left Worcester, Bracy Clark was known by correspondence to one or more of the distinguished continental entomologists of the time.

But his youth was not spent entirely in mental research and cultivation. He established the first cricket-club in Worcester, having become a tolerable adept at that game whilst living in Oxfordshire.

At the age of twenty-one, having completed his apprenticeship, he proceeded to London—and, by his cousin and guardian, John Zachary, Esq., he was introduced to Sir Joseph Banks, president of the Royal Society, and was elected a fellow of the Linnæan Society, which had been founded a few years before (in 1788) by the association of about sixteen gentlemen, lovers of natural history. During the next three or four years he continued his studies in medicine and surgery. Though he entered as a pupil to John Hunter, and became acquainted with that gentleman, he lost the opportunity of being his pupil, as Hunter had just ceased to lecture, and was succeeded by Everard

Home and Dr Bailey. Dr Thomas Young, Sir Anthony Carlisle, Abernethy, Sir Astley Cooper, and Lawrence, were his fellow-students.

He rose at six o'clock to attend Dr Fordyce's lectures, of which he has left several volumes taken by himself in short-hand: his account of these lectures was, that they were very dull, and lasted two hours; the doctor's class usually consisted of only eight or ten. But though he studied human surgery, it was with the intention of qualifying himself as a veterinarian, his choice being thus directed by his eldest brother, Mr Henry Clark, a gentleman fourteen years his senior, a lover of horses, and a keen hunter.

He represented to "the genius," as Bracy was called by him in later years, that there was a wide and unoccupied field, both for investigation and practice, in the new profession which was at that time commencing by the establishment of the Veterinary College at St Pancras. Mr Henry Clark, though he never studied the profession, seems to have had a taste for it, since, on hearing that there was to be a dissection of the famous horse Eclipse, he drove over to Canons, to be present at it. His younger brother very early attached himself to the Veterinary College, and used to mention with delight that he officially led the first horse into the establishment. His commencement of authorship was by a contribution to the *Gentleman's Magazine;* it was, "A short account of the celebrated race-horse Eclipse," and was written in so lively and pleasing a style as to be the cause of an incident happening to him much resembling that so well known of Miss Burney. Our young writer calling one day on a married sister, she put into his hands a magazine, directing his attention to the life of Eclipse as one she was much pleased with, and which he would be sure to like. It was his own article, and his sensitive nature no doubt received encouragement by this unconscious tribute to his opening powers. His next appearance in public was the reading a paper before the Linnæan Society on the genus œstrus, or bots of horses and other domestic animals, 1st November, 1796. It was printed in the third volume of the *Linnœan Transactions.*

In the year 1797, he resolved to visit one of his sisters, who was married to a Swiss gentleman of the name of Secretan, and settled in Lausanne. Sir Joseph Banks, who was very kind to scientific men, provided him with letters of recommendation to all the most distinguished naturalists of Switzerland and Germany, as did also Dr Latham; with these he took his passage in a Yarmouth packet-boat for Hamburg; on her voyage the vessel was captured by an American privateer, and taken into Delftziel in Holland, where the passengers were subjected to hard treatment for two or three days, and deprived of such valuables as they had with them; our traveller's possessions were, however, not of a kind to excite cupidity, and he escaped with little loss. He remained for two years on the continent, where he was looked upon with much interest—it being then dangerous for Englishmen to enter within the bounds of countries under the con-

trol of France. Many testimonials are extant of the consideration he obtained among men of note in Europe, for his industry, liberality, intelligence, and energy. He has left vivid descriptions of his adventures, and the scenery he passed through during an extensive tour in Holland, Denmark, Germany, and Switzerland, but these are not exactly a suitable theme for these pages. Having in vain endeavoured to obtain permission to enter France, and proceeded to study at the Veterinary Schools of Lyons and Paris, he returned to England, devoted himself to the study of the horse, and connected himself much with the intelligent Mr Moorcroft, and Mr Edmund Bond, then an established practitioner.

In the year 1800, he took premises in Giltspur Street, within the boundary of the city, opened an infirmary for horses, and set up a shoeing-forge; and now his careful notice of facts and habit of reflecting and reasoning on the causes of what he observed, soon made him eminent in his profession.

It seems early to have struck him, that it was out of the natural order of creation that horses should, after some years' usage, become *lame:* he had a keen eye for the slightest defect in their manner of stepping, and considered every defect as lameness.

In Clark's *Hippodonomia* is a most interesting account of his unwearied researches into the causes of this lameness; these were at length rewarded by a discovery which he justly characterises as "second to none that has ever been made on the subject of horses," namely, that the horse is no exception to that universal law extending throughout the animal kingdom, the beautiful adaptation of the foot to sustain without a violent shock, at the same time the weight of the animal in motion, and the unyielding resistance of the ground.

It was in the summer of 1804 that the grand discovery of his life, the principle of elasticity in the horse's foot, was gradually unfolded to him; here was indeed some principle to act upon, some lever to raise the enlightened veterinarian above the level of the common shoeing smith or jockey!* It was by most elaborate dissection and careful induction that he had convinced *himself;* his next step was to demonstrate this grand truth to others, and here he was providentially assisted by there being sent to his forge, to have the first irons placed on her feet, a fine blood mare of five years old, which had never been shod: she belonged to George Hobson, Esq., and was sent to Giltspur Street from Weymouth Mews, Portland Place, a dis-

* In the first section of Mr Freeman's work, *On the Mechanism of a Horse's Foot*, published in 1796, Mr F. says:—

"I shall begin these observations by giving some general idea of the construction of the hoof, and of the motion which its *elasticity* admits. This ought always, as much as possible, to be preserved, in order to co-operate with the motion of the muscles, from which the *spring* in all animals is derived."

After such observations, and many more dispersed in Freeman's beautiful work, no person could claim more than originating special views regarding the *elasticity* of the horse's foot.—Ed., *Edinburgh Veterinary Review.*

tance of nearly four miles: the beauty of her foot, and its circular, form, immediately struck him ; he took a plaster cast of it before the so-called *shoe* was applied, and then she was left to his men to cripple her in the ordinary manner. Seven successive years did this great leader in his profession make a careful cast of the mare's foot; each year did the deterioration become more manifest, and before the seventh year of the foot's imprisonment, the mare, though occasionally turned out to grass without shoes, had become unfit for riding, so was put into harness, and was ultimately used for breeding purposes. From that time, up to the last year of his lengthened life, did Bracy Clark seek to invent a shoe suited to the natural expansion of the foot. The tablet-shoe, the removable shoe, to be affixed by thongs after the manner of the ancients, and the malleable cast-iron shoe, were each laboured upon for years. At the same time several gentlemen of his acquaintance, convinced of the principle of expansion in the foot, worked independently to invent a shoe adapted to it—one gentleman rivetted small pieces of iron upon a circular strip of the thickest leather; another, Mr Wyatt the sculptor, settled the question to his own satisfaction, by riding his horse without shoes for several years; while a third, Mr Joseph Dockwra of Kelvedon, Essex, in the year 1820, made the experiment of having the shoes nailed only on *one side* of the foot, so that the other half, being free, was left to expand: this contrivance, under the name of the unilateral-shoe, has found most favour with the public.

Mr Dockwra continued this method of nailing till his mare's death of old age, fourteen years later; unfortunately her complete age is not recorded; Bracy Clark's opinion was, that the horse would attain the age of fifty years, were it not for the cruel sufferings occasioned by the imprisonment of the feet, cutting of the frog, and rude treatment by the smiths. It must not, however, be supposed, that the *feet* of the horse alone occupied the attention of the subject of our memoir; in arresting and curing diseases, Bracy Clark was wonderfully successful, and by his eminence in this respect made a large fortune, which he subsequently almost exhausted by experimenting upon shoeing and in printing and publishing. His treatises on the gripes of horses, (to which he has shown cholera to be nearly allied, and generally curative by the same treatment), on canker; on corns or bruises; on broken wind; and on conditioning, are filled with original and useful information; his *Pharmacopœia, History of the Horse, Anatomy,* essays on their various vices, amounting to thirty-six different publications, all issued at his own expense, are a lasting monument of his superiority to any other writer on the equine race; nevertheless, for want of consulting with booksellers, and submitting in some degree to their dictation, his works have remained mostly unsold, consequently a dead loss. That meed, however, which was denied him in gold and in credit among his fellow-practitioners and his own countrymen, was, as far as possible, made up to him by honours abroad, and by the learned societies at home.

On the translation of his work on the foot, and its publication in French, he was elected a member of the Academie des Sciences at Paris, a distinction he, with reason, prized beyond any other; for his clever hobbles for casting horses during operations, and, when performed, unshackelling all the limbs at the same instant, he was rewarded with the silver medal of the Society of Arts of London; he was also elected a member of the Natural History Society of Berlin and of Copenhagen, also of New York, and of the Agricultural Society of Stuttgard; besides receiving various minor foreign honours, all of them unsought.

Having joined the original members of the Linnæan Society in 1793, and being by far its oldest fellow, he was recognised as the "Father of the Society" at the time of his recent decease, December the 16th, 1860, at the advanced age of eighty-nine.

Doubtless the time is at hand when his countrymen, and their noblest servant, the horse, will reap the benefit of his long and valuable labours.

REPRINT OF REMARKABLE MEMOIRS.

SOME of our correspondents have expressed a desire to see some observations on Influenza in the pages of the *Review*. We herewith reprint, in accordance with a plan commenced in the 8th number of this journal, a judicious paper on the subject, by the late Mr John Barlow, which, in part, may meet their wishes:—

Influenza in Horses. By Mr JOHN BARLOW, late Lecturer in the Edinburgh Veterinary College.

INFLUENZA may be defined as an epizootic catarrhal disease, often accompanied by a low type of inflammation involving more or less extensively the organs of circulation and respiration—sometimes those of digestion and locomotion also; attended by fever of a typhoid nature, and great depression of the nervous system. The disease has also been, however, known by the various designations of horse fever, epizootic or epidemic catarrh, catarrhal fever, and distemper. Catarrhal influenza, or influenza proper, has one condition peculiar to itself, and sufficient to distinguish it from all others, viz., unusual and peculiar weakness. Although by no means confined to the same seasons of the year at each succeeding visitation, influenza is most common in the later months of spring and autumn. It seems most prevalent among young horses, but affects animals of all ages. The fatality of influenza in certain localities is not great. In farm steadings or other situations exposed to prevailing cold winter and spring winds, especially such as come from the sea, the mortality is

much higher, and has reached 25, or, in aggravated cases, even 40 per cent. Among the most prominent of the predisposing causes, overwork, with poor feeding, undue exposure to extremes of cold and heat, bad ventilation, with its too frequent concomitants, darkness, dampness, and filth. Overwork weakens the system directly by exhausting energies beyond their resources. No amount of food can compensate for over-reducing labour. Hence, we find in many large towns, that the useful, but often hardly-wrought and imperfectly-stabled coach, cab, and omnibus horses, fail largely under influenza. When a horse is at ordinary work, the skin becomes raised in temperature, perspiration is excited, there is an increasingly rapid passage of blood through the lungs and system, in order to maintain animal and organic activity. If the horse be placed in a cold or damp stable on coming home, or suddenly exposed to the action of cold in any other way, the balance of circulation becomes greatly disturbed. The action of cold produces a constrained or contracted state of the skin and its vessels, blood is repelled from outward surfaces, and must collect round and within internal organs, causing their congestion, a condition but one stage short of inflammatory action. Repeat this process once or twice a-day; that, too, in winter or spring weather, then judge, from your own feelings, what will be the result. Many of us can date an attack of illness (possibly of influenza) from causes of this kind; to-day, for instance, we are heated with exercise, we get cool by standing in a draught, then comes a shudder without, and a chill within—to-morrow we have a sore throat and oppressed chest. There seems something specially irritating in the cold and draught of a spring east or north-east wind. Horses, for instance, are changing, or preparing to change their coats, the skin has commenced an activity, which is arrested or destroyed by the prolonged action of cold. When horses are kept in open exposed courts, which, in many instances, are damp also, the action of cold, injuriously alternating with the heat occasioned by labour, is all the more severely felt. Mr Proctor of Liverpool informs me that influenza is extremely common in draught horses engaged in drawing timber from the docks, where they are exposed to draughts of cold air after being kept in a warm stable, or heated by exercise. Mr Goodwin, veterinary surgeon to the Queen, remarked, during the influenza of 1844-5, that most of his affected horses stood on the sides of stables exposed to the north-east. A cold wind blowing directly into a comparatively well-ventilated stable, will often induce coughs and colds in abundance. If the stable be close, warm, and damp, the colds will often run on to bronchitis and pneumonia, or bad cases of influenza will occur if that epizootic be prevailing. The animal body is ever taking in material for its support and purification in the shape of air as well as food, and is as continually separating or voiding what is injurious by the lungs, bowels, and kidneys. The horse is a naturally cleanly creature. His immense lungs require so much good air, that he shuns offensiveness instinctively. When he has the chance, he avoids bad smells almost

more resolutely than any other animal. Every one has in his mind's eye the side of an ordinary parlour, with its two windows for light, its fire and door for warmth and ventilation. Every one knows, too, that four or five horses, each requiring at least eight times as much air as a man, are often stabled in less space than this, with perhaps no window that admits light, no provision to remove the dampness and gases originating in the natural evacuations, no special provision for entrance of air, except such as may find its way under the door, no way for impure and heated air to escape, except through one fortunately broken pane, out of some three or four dirty pieces of glass forming a caricature window over the door. But why are so many stables almost dark even in the daytime? With darkness in stables, there is almost always dampness; where darkness, dampness, and a close atmosphere combine, each and all reeking with decomposing animal evacuations, there is the worst possible provision for sustaining life and health in a state of integrity. Small, indeed, is the spark here required to kindle a great amount of disease. When influenza prevails—when epizootic disease of any kind prevails—each is most severely felt in dark damp stables, the unnatural heat of which is caused by many horses crowded into a small compass. Every veterinary surgeon knows that he has more disease in proportion in a stable containing twenty horses, than among twenty horses divided among five, six, or seven different stables. Sometimes, indeed, the space falls below what is considered necessary for the human being. Singular to state, too, we often find as much provision for air and light in a stable of one stall as in a stable with ten. Here is the formula for a six, eight, or ten stall stable—one door, one dirty window over it, one broken pane, one grating covered with filth to prevent the wash from flowing into the one stinking drain, with darkness and dampness presiding over all. But these predisposing causes, active, as they too often are, can scarcely operate so precisely alike, and at the same time, as always to induce the same epizootic disease. What in fact is the exciting cause of influenza? Many have speculated on this part of the subject so much more ingeniously and learnedly than I can do, that I gladly leave the matter in their hands. Weather cannot always (at least) be the exciting cause, as the disease, both in man and beast, prevails in all seasons. Does influenza spread by contagion? Many veterinarians are of opinion that it does. I have never seen good grounds for thinking so myself. In numerous mild cases, occurring where predisposing causes are not very influential, a simple attention to what may be called good nursing will afford nature the only aid she requires to recover from an attack of this disease. I know an army veterinary surgeon of great experience, who, when influenza appears in his regiment, watches narrowly for cases as they occur, and at once places them under strict nursing. He also diets all the still healthy horses, and attends carefully to ventilation of the stables. Under this plan, and almost without any medicine being given, his success is nearly uniform; he cannot, for

years and years, remember a death. We are apt to imagine that recovery from disease must be insured by the aid of medicine, and the art of physic very frequently gains a credit which it does not deserve. In the earliest stage—say the first day of illness, we find the whole system depressed, the functions of the skin, and internal membranes, and secreting organs impaired or even suspended, a small pulse of 60 or so, and the spirits desponding. Nothing, it is plain, is required to add to the prostration—no bleeding, no purging. The first and most important aid we can render is, to place the patient where he can breathe a pure, mild, dry atmosphere. This will allow the heart and lungs to work to the greatest advantage with the least amount of labour. A sick horse often repays the luxury of a loose airy box, by recovering more speedily than when tied in a stall. The body must be warmly clothed, the legs bandaged, and a deep bed of good clean straw allowed. Injections of soap and water must be given twice daily to relieve the bowels, and as the patient probably will not eat, let him have gruel or even water to drink. The practice of forcing the horse with drenches at this stage is a bad one; it sickens and irritates him. Many horses will not drink tepid water; indeed, it is a sickly beverage, and, so far as I am aware, possesses no peculiar virtues above water that has been allowed to stand in the stable for a few hours. Trifling as they may seem, we have known a horse's pulse fall five and ten beats in a minute in less than an hour by the adoption of measures such as these. If the cough be severe, benefit is sometimes obtained by allowing the steam from hot water or bran to pass into the nostrils; this moistens and relaxes the sore membrane, and solicits a secretion therein which affords relief. A mustard embrocation, or other stimulant applied to the throat outside, is often of use. If the bowels be merely torpid and not constipated, purgative medicine need hardly be given, for, owing to the state of general weakness, relaxation of the muscular system, and the congested state of internal organs generally, many cases of influenza have been destroyed by purging. A much smaller quantity of medicine—as 3 drachms of aloes—will act far more severely here than will a large dose on many other occasions. A little common salt or nitre may be dissolved in water occasionally if the animal will drink it. The clothing and bandages should be removed, shaken, and renewed again twice or thrice daily, the legs should be handrubbed if cold, and the nose should be sponged frequently with vinegar and water. If, by the third day, the mouth should be cooler and more moist, the pulse lower in number and firmer in beat, the bowels, kidneys, and skin acting, the nose discharging a thickish slightly yellow fluid, the eyes well open, the head held higher, and the animal disposed to lie down, we may expect convalescence in a few days more. Cooked roots and small quantities of crushed corn, or, best of all, green food, may be allowed sparingly, as the appetite returns. In some, and occasionally, too, in many instances, appearances are worse rather than improved by the third day. Fluid is collecting in the chest and pericardium. Will you bleed? No, I

will not, because I never saw it do anything but harm in cases of this kind, and have observed that death has occurred sooner where cases were bled than in others let alone. Bleeding aggravates the disease by favouring that typhoid state on which the low type of inflammation depends, and absolutely increases the exudation we are anxious to diminish. Every veterinary surgeon with whom I have corresponded on the subject tells me that his experience is quite against bleeding in any state of this disease. Dietl of Vienna has shown that by bleeding all cases of inflammation of the lungs in man, and giving emetic tartar also, the deaths amounted to 20 per cent. On the other hand, by discarding bleeding and emetic tartar—by nursing carefully, and allowing spare diet, he found in a trial of three years, on 750 cases of the same disease, that the deaths were little over 9 per cent. In order to "lower the pulse," as it is termed, the use of sedative medicines is advised by some. I believe the action of these in the horse to be uncertain in the extreme. Emetic tartar has been much relied upon as a sedative; it is always slow to act, if it really does possess any active property; but I am convinced that in many, indeed the majority of cases, it has no beneficial action at all. A horse in health can take an ounce a-day for ten days or a fortnight without any apparent effects being produced. Many veterinary practitioners have now entirely discarded the use of emetic tartar. By giving sedative medicine, however, with the single view of lowering the pulse, we treat one symptom, seek to fulfil but one indication, and are narrowly acting on one idea. The pulse will only improve as the secretions of the skin, bowels, and kidneys are restored, and the diseased processes arrested by a substitution of natural organic functions. So long as disease exists to cause disturbance, the pulse is an index too faithful and true to be beneficially influenced by emetic tartar, digitalis, or any other drug which will not benefit the system at large. It is well known that saline medicines have a peculiarly good chemical effect on the blood in febrile diseases; they also induce gentle action in the skin, kidneys, and even bowels. When a horse will drink water or gruel (and he generally will take one or both), then let common salt, nitre, or even Epsom salts, be given, dissolved in the pail standing in his box. In the stage of actual typhoid inflammation, calomel and opium in small doses, repeatedly given, are extremely useful, by acting on the blood directly, and indirectly on the heart and secretions. These drugs, however, are useless in cases of extreme weakness, or where the exudation is already copious. Here we must give nitrous æther, alcohol, iodine, and diuretics. Blisters are also of service where the inflammation seems to extend rather than subside under the action of other remedies; many practitioners employ setons, and apparently with benefit; but, through all, give pure cool air; this is the only thing which is at the same time a sedative and a stimulant—it is the only thing which is equally useful in health as well as in all stages of disease. If water should collect in the chest to such extent as to

threaten suffocation, it may be worth while to remove it by the operation of tapping. This, however, is but a forlorn hope. It gives relief, no doubt, but that relief is often temporary. A summary of the treatment, then, may be thus expressed:—Avoid everything which weakens the system, and especially avoid free purging and bleeding. Give plenty of cool pure air. Clothe the body, to keep the skin warm, for in a cold skin no secretions are performed. Give injections to relieve the bowels, and, if absolutely needed, give a mild dose of laxative medicine. Give saline medicines in water or gruel, to compensate in some degree for the deterioration the blood undergoes, under the existing typhoid inflammation and exudation. Give small and often repeated doses of calomel and opium to act on the system generally, and indirectly on the seat of disease. Blister or seton the throat and sides if need require it. But to treat influenza on the system of "copious bleeding," "free purgation," and "wholesale blistering," is to destroy the resources of nature; it is, in fact, to trifle with life and parley with death, and one mourns for the reputation of the healing art when this is called medical practice. It may be, and alas! too often is, a system of practice adopted by the routinist and empiric; but, so far as influenza is concerned, it is not the practice adopted by the rational practitioner of a rational veterinary medicine.

REVIEWS.

A System of Surgery, Theoretical and Practical, in Treatises by various Authors. Edited by T. Holmes, M.A., Cantab., Assistant Surgeon to the Hospital for Sick Children. In 4 vols. Vol. the First: *General Pathology.* London, 1860. Pp. 825.

We have here a real protest against the "Compendiums" or "Manuals" to which Professor Syme refers, in the preface to his *Contributions to the Pathology and Practice of Surgery*, as "imperfect and perverting channels—the parents no less than the offspring of mediocrity." Consisting as the volume does of a number of essays by Simon and Paget, Poland and Savory, Moore and Barclay, amongst others, it possesses a *prima facie* interest fully realized in some of its parts, —pre-eminently so in Mr Simon's monograph on Inflammation, in which justice is done to the most recent discoveries, and the whole subject is treated with so much originality and erudition, as to constitute a most important contribution to general medical literature.

It might be unreasonable to expect, from all the authors who have ranged themselves under the editorship of Mr Holmes, work as comprehensive and as profound as Mr Simon's; but, candidly, Mr Holmes Coote has scarcely done justice to himself, to say nothing of his colleagues, in his article Gangrene, the senile variety of which is superficially treated in three pages, its pathology in *three lines*

(p. 195),—"Mr Pott's belief, that the idea of the disease proceeding from an ossified state of the arteries, is a mere conjecture, has been sufficiently answered by the observations of Thomson and Hodgson." Such handling of an important subject would scarcely be excusable in a third-year's student.

Mr Callender on Pyæmia is somewhat more happy, but his experiments have been too limited in number and kind, his clinical observations too narrow, his literary labours not sufficiently profound, to enable him to do anything like full justice to his theme. He thus writes of the animal poison of Pyæmia (p. 266):—"There is no necessity for dwelling upon its absorption by the lungs or by the alimentary canal, since such inquiry, interesting though it be, leads to the consideration of internal diseases rather than of surgical complications." Now, how is it possible to study Pyæmia as a surgical complication and not as an internal disease? Mr Callender has unwittingly admitted the fatal defect of his essay.

It had been our intention to devote a sheet to this important work, but pressure of matter compels postponement. This notice may at least serve to direct the attention of our readers to a most welcome New Year's offering; and should it fall under the notice of the editor, we trust that, although we may not have pointed out merits and demerits which have escaped him, he will find reason for stimulating the endeavours of some members of his staff, that they may lessen the distance from, though they cannot hope to attain the excellence of, the learned men with whom they have had the honour of being associated. Every one cannot be original, but every one has it in his power to display painstaking investigation.

Traité de Physiologie comparée des Animaux Domestiques. Par G. Colin. Paris: 1854.

Treatise on the Comparative Physiology of the Domestic Animals. By G. Colin. 2 vols., pp. 664, 625.

The large closely printed work before us may be regarded as an elaborate treatise upon the physiology of the animals which man has reduced to a state of domesticity. In a work of this kind, particular prominence is given to those peculiarities of function, and to those actions which are of practical interest to the student of veterinary medicine, but which would not be considered in a work upon general physiology. At the same time, when we remember how large a share of our knowledge of the physiology of the vertebrate type of animal (man included) is derived from experimental inquiry upon the persons of horses, asses, dogs, &c., we cannot feel surprised at finding much in this work which may be found in any half-dozen books on general or on Human Physiology.

After a lengthy introduction upon organization in general, and the

modes of obtaining physiological information, M. Colin disposes of the animal functions under eleven different heads, taking for his first the function of Innervation, upon which he remarks :—

"The first, innervation, governs and regulates all the others which it holds in dependence upon it. It presides over sensations, movements, digestion, respiration, and, in general, over all vital actions: without it the muscle cannot contract, the stomach cannot digest, no organ can perform its part; it is in a measure the principle or the point of departure of organic phenomena; lastly, it has, like those (functions) which follow, its special instrument, which is the nervous system, its object, its characters, and its laws, which are capable of being determined with a vigorous precision."—P. 53.

Whilst we perfectly agree with M. Colin as to the very great importance of the function of innervation, we are not sure that it ought on that account to be considered first. It appears to us a more philosophical mode of classifying the animal functions to begin with those which are common to organic life, which are necessary for the life of the plant as for that of the animal. Under nutrition and innervation may be classed all the functions required for individual existence; but the former, on account of its greater simplicity, might well precede, in the consideration of the student, the study of innervation which presents for solution problems of the greatest difficulty. Under a third head, Reproduction, may be studied, those actions necessary for the continuation of the species.

As it is, we do not regret that our author has taken Innervation for his first chapter, because we shall very willingly begin there with him, and shall use his pages as a text with which we may connect some of the more recent revelations in this department of science.

The means used to solve the difficult inquiry as to the laws which regulate the perception of a sensation, the production of a motion, or the elaboration of a thought, may be classed under the heads physical, chemical, histological, experimental, or pathological, and each of these methods has found, during the last ten years, its most ardent and devoted cultivators; but notwithstanding the sensibility of our galvanometers, the penetrating power of our microscopes, and the nicety of our vivi-sections, we are still far from reaching anything like a satisfactory knowledge of the mysterious workings of this complex web of cells and fibres.

The fine physical methods which Du Bois-Reymond has introduced in nerve-physiology, mark a new, great, and important advance in one direction. His researches have made us acquainted with the electro-motory properties of primitive nerve fibres, and have also shown that these electro-motory relations stand in essential connection with certain physiological innervation phenomena. The electro-motory relations of nerves now forms a considerable chapter in all the German text-books on Physiology; but in the work before us, and in the more recent English treatises,[1] little or nothing is said

[1] Bennett's *Outlines* and the new edition of Kirke's are both most lamentably behind in this respect.

upon the subject. But though these researches are in themselves very valuable, we must not overlook the fact, that upon another part of the nervous system, on the *grey matter* and its ganglionic cells, the fine physical methods have not thrown one ray of light. Could we discover the means of examining the nerve cell, as Du Bois-Reymond and others have examined the nerve fibre, we should at least be in possession of a *complete* chapter on the physical relations of nerve-elements; but until that period arrives, we are not in a position to build any theory of the action of nerve tissue founded upon a knowledge purely physical in character. The identity of nerve force and electricity is still an open question, and so long as it remains so, the opinion (expressed by one of the purely physical school), "that an intimate study of the electro-motory properties will lead to a perfect knowledge of the processes which we designate nerve activity,"[1] must be regarded as premature.

Another deficiency which we meet with in M. Colin's chapters on nerve physiology, is the absence of any details upon the minute structure of the central nerve organs. This is a subject upon which, during the last ten years, a very large amount of the attention of histologists has been bestowed, and since the introduction by Hannover of chromic acid as a hardening agent, very great progress has been made, although there still remains much to be corroborated and explored.

From the labours of many continental inquirers, more especially perhaps from those of Rudolph Wagner, it appears that the central grey matter in all parts of the nervous system, is merely an aggregation of multipolar nerve cells embedded in a stroma of gelatinous or fibrillated connective tissue in which blood-vessels ramify. A further fact of importance first clearly demonstrated in the large nerve cells of the electric lobes of the *Torpedo marmorata*, and now recognised in the nerve organs of all animals, is the connection of these cells by means of two or more processes with primitive nerve fibres. An apolar cell, once recognised as a nerve element, is now viewed as a nonentity. These being regarded as primary essential facts, the riddle which anatomists have to solve, is the relation of the one element to the other, of the fibres to the cells. This is done by sections rendered transparent by some chemical agent; but every one who has examined such sections will at once admit the difficulty in getting preparations which show the course of a fibre for some considerable distance. But the difficulty is increased tenfold, when we learn that all the cells and all the fibres which we see in such sections are not endowed with nervous functions, but belong to the system of connective tissues, which have lately occupied so much the attention of anatomists and pathologists. It is only recently that the existence of a connective tissue frame-work, consisting of a structureless intercellular substance, and of minute anastomosing cells and fibres, has

[1] Eckhard: *Grunüzge der physiologie des Nervensystems.* 1853.

been demonstrated; and since the discovery the difficulty has been to determine what belongs to one system, and what to the other. In the case of the spinal cord, some anatomists hold that all the cells are nerve cells (Lenhossek Stilling); whilst others maintain that those large multipolar corpuscles in the anterior cornua are alone to be regarded in this light (Bidder, Kuppfer, Owsjannikow, &c.) We possess no chemical means of determining which is which; but if the processes of the cell, be they large or small, can be traced into true dark-bordered nerve tubes, there can, however, be no difficulty. On the other hand, a connection has been observed between the epithelial cells lining the canals of nerve organs and the fibres of the connective tissue, so that the former may be regarded as belonging to the latter. This connection has been demonstrated by Bidder and Kuppfer,[1] and more recently by Mr Lockhart Clarke,[2] around the central canal of the spinal cord, and by Gerlach,[3] around the Sylvian aqueduct.

Turning now to the arrangement and distribution of nerve cells and fibres, very much has been done to elucidate the structure of the spinal cord, brain, and sympathetic system. Amongst the most prominent contributors to the anatomy of the first of these organs are Stilling, Schrœder v. der Kolk, Clarke, Schilling, Wagner, Bidder, and his pupils. Although upon many points their observations widely differ, there are some important particulars upon which all are now agreed—no one now doubts, not even Kölliker, who long opposed the notion, that the fibres of the anterior spinal nerve roots originate in the large nerve cells in the anterior horns of grey matter. It is also well established, that the motor roots are only mediately related to the brain, that fibres arising in the motor cells run upwards to the brain in the anterior columns. The connection between an anterior root on one side, and its fellow on the other, is also mediate, the anterior commissure serving to connect the cells of the opposite halves of the cord. The course of the fibres of the posterior roots has been a matter of greater difficulty; some trace a part of them to the brain in the white posterior columns, and another part (reflex fibres) to the grey matter (Schrœder v. der Kolk); others find that all go to the posterior grey horns (Stilling); whilst a third party trace them into the anterior horns, maintaining that as no *nerve* cells exist in the posterior horns, nerve fibres cannot, of course, join them (Bidder and the Dorpat school). Further inquiry alone can determine such questions.

In regard to the medulla oblongata, at least, two very important essays have appeared since Stilling published his great work. The one by Schrœder v. der Kolk, has just been translated by the New Sydenham Society, and the other by Mr Lockhart Clarke, was pub-

[1] *Untersuchungen ueber die textur des Rücken marks*, p. 45.
[2] *Philosoph. Transactions*, 1859, p. 455.
[3] *Mikroscopische Studien*, 1858, p. 21.

lished just about the same time, in the *Philosophical Transactions*. The most remarkable observation in the work of the former, is that of the indirect crossing of the cerebral nerves. It would appear from his investigations, that the various nerves arising from the medulla oblongata originate in the nerve cells of the various nuclei (described by Stilling); and further, that fibres ascend from these cells, decussate in the raphè of the medulla, and terminate in the opposite half of the brain, there to communicate with the higher psychical influences. Further, Schrœder v. der Kolk has shown that communicating fibres connect nuclei, and thus explain the channel of reflex actions in the cerebral nerves; in order to secure perfect bilateral action, auxiliary ganglia, connected on one side with a nerve nucleus, on the other, with a corresponding ganglion on the opposite half of the medulla, are provided. The olivary bodies he supposes to act in this manner, each being connected on one side with the facial and hypoglossal nerves, and on the other, with its fellow of the opposite half of the organ. Besides the olivary bodies, auxiliary ganglia unite the trigeminal with the facial nerve, and the trigeminal with the glosso-pharyngeal.

On the nature and arrangement of the sympathetic nerve elements, and on their relations to the cerebro-spinal system, much doubt prevails. Some hold that no cerebro-spinal nerves enter into the constitution of the sympathetic, but that all the fibres originate in its ganglia, thus constituting an independent centre, (Kuettner); but the more generally accepted view is that of Kölliker, who holds that, whilst many fibres originate in the ganglia of the sympathetic, a very considerable portion of cerebro-spinal fibres enter by the Rami communicantes. Remak holds a similar view, but he differs from Kölliker in regarding all the cells of the ganglia as multipolar, whilst Kölliker holds them to be unipolar. In this matter we believe Remak to be correct, at least, or have seen in the sympathetic, and in the semilunar ganglia of man, multipolar cells only.

On the structure of the cerebellum and the brain, observations have lately been made by Gerlach,[1] and by Berlin.[2] In the cortical substance of the cerebellum, Gerlach describes peculiar bipolar cells, giving off at one pole a branching process to the periphery, and connected at the other with the ultimate ramifications of a nerve tube, on which numerous nuclei are inserted. These cells do not anastomise, but form isolated systems. They were described by Wagner as retort-formed cells.[3] In the cortical substance of the brain Berlin distinguishes (by means of Gerlach's carmine-imbibition method) six layers. One of these is a stratum of nuclei which are connected with nerve fibres as in cerebellum; the fibres he traces to the fifth layer (from within outwards) where the nerve cells are very thickly

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[1] *Mikroskopische Studien.*
[2] *Beiträge zur structurlehre der grosshirnwindungen*, 1858.
[3] *Neurologische untersuchungen*, p. 164.

congregated; in the sixth layer, which is pale, there are but few cell elements, and fibres here run parallel to the surface, probably serving to unite cell with cell.

The high functions assigned to the grey matter of the brain impart great interest to the examination of its structure. The cells of Berlin's fifth layer are probably the mysterious organs in which, or through which, psychical processes are conducted, the points at which mind and matter touch each other, and if viewed in this, their functional sense, they must rank first among the tissues of the organism.

Whilst making these remarks upon the progress of nerve histology, we would express the hope that further labour in this field will disclose to us the arrangement of those mysterious organic wires, whose grand functions are to convey, on the one hand, the orders from Mind to be executed by Matter, and on the other, to conduct the impressions made upon Matter to the point at which they are to be perceived by Mind. But it is vain to expect that Histology can do more than determine the channels, through which that mysterious force, call it nervous-electric, or what you will, operates; its relation to the cell which elaborates it, or the fibre which conveys it, remains dark as before.

M. Colin rests his description of the various nervous functions principally upon the experimental methods which have been so largely employed to discover the functions of separate parts, and which have in some instances, for example, in the hands of our countryman, Sir Charles Bell, produced the most brilliant results. To the vivisections of Bell, Magendie, Longet, Flourens, &c., and to their representatives in modern times, Bernard, Brown-Séquard, Schiff, &c., we owe the greater portion of our knowledge of the functions of nerves and nerve centres. Where the parts are isolated and accessible, the vivisection method may clearly be regarded as a sure means of arriving at accurate results, and in the case of the spinal cord, and the cerebral and spinal nerves, experiments of this kind are of very great value. When, however, we wish to determine such questions, as the part in which the fibres subservient to the will, terminate, or to ascertain the particular function of a part of the brain, experiments upon living animals are much too coarse and indefinite. The occurrence or non-occurrence of movements, or of paralysis, after removal or injury of certain parts of the brain, or upon mechanical or electric irritation of this or of that part, cannot furnish us with sharp or definite conclusions, because we know not whether we are acting on nerve fibres in a part of their course, or on the centres in which these fibres terminate—whether the movements we produce are reflex or voluntary. The earlier experiments of Flourens, Magendie, and Longet, which M. Colin constantly quotes, are now regarded as much less significant than they were twenty years ago. The work of Longet, which abounds in experiments on the different parts of the brain, only affords proof of the utter poverty

of the fruits of this department of experimental physiology. In the works of such physiologists as Ludwig and Funke, the indefinite nature of experiments on parts at the base of the brain is indicated, and, rather than run the risk of drawing fallacious conclusions, these writers content themselves with a confession of utter ignorance upon the physiology of most parts of the brain and cerebellum. In this respect we admire their wisdom; and, rather than follow M. Colin in this direction, we prefer to devote the rest of our remarks to the experimental study of one of the less complicated nerve centres—the spinal cord.

After the brilliant discovery of our countryman, Sir Charles Bell, of the distinct functions of the anterior and posterior spinal nerve roots, the attention of physiologists was earnestly devoted to the discovery of the channels of sensation and of motion in the spinal cord. Many and various have been the results arrived at by different investigators. At one time the posterior, at another the anterior columns were regarded as the conductors of sensitive impressions by the same physiologist (Magendie). Another believed the anterior and posterior columns to be motor, whilst sensitive impressions were conveyed by the grey matter (Bellingeri); a third held that the anterior and posterior are common to motion and sensation (Schoeps and Rolando); whilst a fourth, in adhering to the last view, further averred that the grey matter alone conducted sensitive impressions to the brain (Calmeil). In 1840, Longet, and before him, Van Deen, propounded the view which we find adopted in the work before us, and which, until quite recently, was very generally accepted. M. Colin states it thus:—

"Lastly, M. Longet placed in contact with the superior columns (the posterior) the poles of a galvanic battery; acute pain was manifested unaccompanied by convulsions; he then placed the poles in contact with the inferior (anterior) columns, and convulsions appeared without pain. Thus the superior column, very sensitive, presides exclusively over sensibility; the inferior column, on the contrary, is insensible, and presides over motricity."

It appears rather odd that M. Colin, in writing upon this subject, should not once refer to the numerous and widely-published researches of his countryman, M. Brown-Séquard, or to those of M. Schiff. Since the publication of Brown-Séquard's lectures in the *Lancet*, his opinions on the Physiology of the Nervous System are now pretty well known in this country, but we may be allowed, perhaps, here briefly to refer to them, and also to the views of Schiff, published in his work on Physiology.[1] Instead of regarding the posterior columns as essential to the conduction of sensitive impressions, Brown-Séquard and Schiff find that their complete division has no influence in preventing such impressions reaching the seat of sensation, and that, instead of producing paralysis on the side of the section, there is an actual increase of sensibility behind the section. According to them, it is the grey

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* *Lehrbuch der Physiologie.* 1858.

mattter which is essential to the conduction of sensitive impressions, though in itself it is quite insensible (æsthesodic), irritation producing no symptoms of pain! The smallest portion of grey substance is sufficient for conduction, and it matters not whether it be a portion of the anterior or of the posterior grey matter. According to Schiff, the posterior columns are the only sensitive parts of the spinal cord, and these owe their sensibility to the posterior roots; in themselves they are not sensitive, as may be seen in the cervical part of the cord, where the white substance may in itself be tested (Chauveau and Brown-Séquard) apart from nerve roots. When all but the posterior columns is divided, sensibility to touch remains, but sensibility to pain is lost (Schiff). Schiff therefore assigns to the posterior columns the conduction of tactile impressions, and to the grey matter the conduction of sensitive or painful impressions. In regard to motor impulses, Schiff finds that the anterior grey matter conducts these as well as the anterior columns, an observation previously made by Stilling. But he goes farther than this, for he says the *posterior* grey horns will do equally well, and that "every transverse portion of grey substance conducts movement from the anterior to the posterior part of the body." As the posterior grey cornua and the posterior columns are in themselves not sensitive, so Schiff finds the anterior grey horns and the anterior white columns in themselves not motory, *i.e.*, isolated irritation of these parts does not produce movement. He terms them "Kinesodic." The only motory parts are the anterior roots. In this view Brown-Séquard and Chauveau concur. As regards the lateral columns, Schiff agrees in the opinion of Bell and Longet, that they contain the respiratory nerves for the corresponding half of the body. Such are the views of the latest writers on the functions of the various portions of the spinal cord. Well may we exclaim, "What is truth?" Are we now to believe that nerve fibres possess the property of conducting a sensitive impression, or of giving forth a motory stimulus, without being in themselves sensitive or motory? Why should a fibre be sensitive or motory in one part of its course and not so in another? Is there no demarcation of function in the spinal cord? Such like questions are suggested by the experimental investigations of Schiff and Brown-Séquard. We must confess that the old view of Longet's is much more in harmony with the suggestions which an anatomical consideration of the spinal cord would produce, and as yet we see no way in which these extraordinary conclusions can be reconciled with our present knowledge of the structure of the organ. If it is a fact, as we believe it to be, that the anterior nerve-roots are motor, and the posterior sensory, and if it is also true that, in their course to the brain, they preserve these properties, it is clear that a study of the structure, a careful following of the course of the fibres must lead eventually to a knowledge of the functions of the different parts of the cord.

In the following brief sentence, M. Colin settles the question of the cross influence of the cord:—"The cord exercises on the parts to

which the nerves go a direct, and not a crossed action; if the right half of the organ is irritated, convulsions take place on the right side; they occur on the left side if the left half be irritated; when one destroys the right half, paralysis ensues in the same side. This is easily explained, for the fibres of one side do not decussate with those of the other."—P. 97.

Such is not the view which has gained most support from experimental physiologists, though on this subject there is just as much difference of opinion as on other topics. Very recently, Prof. Von Bezold, from an extended inquiry, has come to conclusions similar to those of M. Colin. On the other hand, Stilling and Eigenbrodt found that a decussation both of motion and sensation took place in the cord, whilst Brown-Séquard believes in a decussation of sensation alone. One would think that it was not a very difficult experiment to divide cleanly and completely one half of the spinal cord of a dog or a rabbit, and to observe accurately the effect upon the sensation and motion of each side of the animal; yet, in this comparatively simple experiment, we find every possible difference of result. Those who have witnessed Brown-Séquard's exhibitions in this country, or who have performed the experiment personally, can scarcely doubt that, after division of one-half of the cord, paralysis of sensation takes place on the opposite side of the body, whilst an exalted state of sensibility occurs behind on the side of the section.

After discussing the reflectory activity of the cord, M. Colin remarks:—"From the fact that the spinal cord enjoys the faculty of exciting movements without the participation of the brain, it is not necessary to conclude, with certain authors, that it perceives in its own way external impressions—that it governs regulated and purposive movements; these are exaggerations, without any real foundation."

M. Colin seems quite sure of all this, and speaks very decidedly. We do not feel at all certain that these are exaggerations without any real foundation. The grey substance of the brain is allowed by all to be the seat of psychical actions; and wherein does the grey matter of the cord so differ from that of the brain, that it is an *a priori* absurdity to assign to it the faculty of perceiving impressions, or of originating combined and purposive movements? Is it not rather strange that physiologists should be unwilling to assign any of the higher nervous functions to the long tract of grey matter in the spinal cord? If the question be considered in a purely physiological sense, and apart from any psychological axiom, we shall see that the existence of what German physiologists term a "sensorium" in the spinal cord is very far from being an exaggeration without any real foundation.

As regards the history of this subject, both before and after Marshall Hall's discovery, or rather elucidation of the reflex functions of the spinal cord, physiologists have observed certain actions which could not well be explained on the reflex theory. Amongst those who have contended for the existence of sensational and volitional powers

in the cord may be mentioned Procharka, Legallois, Cuvier, Wilson, Phillip, Volkman, and Arnold. In modern times the matter has been very carefully investigated by a German physiologist, E. Pflueger,[1] whose curious and interesting experiments have excited much attention amongst foreign physiologists. In this country Mr Lewes, whose versatile intellect has lately produced *The Physiology of Common Life*, has repeated Pflueger's experiments and confirmed his results.

It is obvious that our information can be derived only under circumstances in which the functions of the spinal cord can be studied apart from the actions of the brain This can be done in man when he is asleep, in injuries of the spinal cord, when a complete division has occurred, and in decapitated animals. Let us see what amount of evidence is to be had from a study of the subject under these three conditions :—

1. Observations on a person asleep. The actions of a person during sleep are compared by Pflueger with those of a decapitated animal. The reactions observed on stimulating or irritating a person asleep are generally termed reflex—by which we understand a mere mechanical response to the impression made upon a nerve centre, without the intervention of any adaptive or volitional agency. But what are we to say to the following ingenious experiment by Pflueger? After stating that children are better adapted for experiments than adults, because of their being more sensitive when asleep, he says, at p. 133,—"I tickled the right nostril of a boy three years old. He immediately raised his hand to push me away, and then rubbed the part. When I tickled the left nostril, he raised his left hand. I then gently drew down both arms, laying them close to the body, and embedding the left arm in the clothes, and placing on it a pillow, by gentle pressure on which I could keep the arm down without awaking him. Having done this, I tickled his left nostril. He at once began to move the imprisoned arm, but could not reach his face with it, because I held it firmly though gently down. He now drew his head aside, and I continued tickling, whereupon he raised the *right* hand, and with it rubbed the *left* nostril—an action which he never performed when the left hand was free." To explain this experiment by supposing the action to be merely reflex, as Schrœder van der Kolk seeks to do, is to us less satisfactory than the acceptation of a certain sensorial power residing in the spinal cord. Moreover, the laws of reflex action prove that, ere an extension of reflexion to the opposite side takes place, it travels upwards to the medulla oblongata, producing movements in the muscles supplied by the nerves *above* the part of the cord originally stimulated, before it affects the motor nerves of the side opposite. It is not necessary to suppose the presence of cerebral or thought-consciousness, because during sound sleep the intellectual operations are supposed to be

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[1] PFLUEGER: *Die sensorischen Functionen des Rückenmarks der Wirbelthiere.* Berlin: 1853.

wholly suspended. We know that in a state of reverie, or in a "brown study," we perform many actions of which we are perfectly unconscious, and yet such actions cannot be termed reflex; they are spontaneous volitional acts performed in the absence of thought-consciousness, and are in many respects analogous to the movements of the sleeping child.

2. Experiments on persons who have injuries or degenerated conditions of the spinal marrow give no evidence of cerebral *consciousness* of the condition of the parts below the injured portion of the cord. Marshall Hall regarded all such movements as reflex, but Pflueger, and his follower Mr Lewes, contend that there may be a consciousness resident in the spinal cord, different, indeed, from cerebral or thought-consciousness, in giving to the mind of the patient no knowledge of the state of the parts which the spinal cord supplies. To us the arguments of Pflueger and of Mr Lewes appear very like a contention about terms, and we can see in them no reason whatever for rejecting the use of the reflex theory. Unlike the case of the sleeping child, experiments on such patients have *as yet* afforded no evidence of any other than automatic mechanical movements, *no indication of adaptation of means to meet a desired end.* Mr Lewes says, "The nervous mechanism is cut in half. How then can any cerebral volition be obeyed by his legs; how can any impression on his legs be felt by his cerebrum?" But we would ask, Is not cerebral volition annihilated when a child is asleep, and is it not so when an animal has its head lopped off, yet in both these cases there is evidence of something more than mere mechanical or automatic movement.

3. Experiments upon decapitated animals yield the most positive proofs of the existence of a sensational and volitional power in the spinal cord. If we cut the head off a frog, the animal is at first stunned by the operation and remains motionless, but by-and-by it recovers, and drawing up its legs, assumes the sitting position. If the leg be drawn out, it is again retracted. When the medulla oblongata is left, frogs hop about and swim as if no serious injury had happened to them. Beheaded lizards walk about, beheaded eels and snakes creep, beheaded turtles crawl about for months (Redi), and beheaded birds preserve their power of flight. These facts prove that co-ordinated actions can take place when the brain is removed. We may, with Schrœder van der Kolk, assume that pre-arranged connexions of groups of motor cells exist in the spinal cord, and that it is to the cord and not to the cerebellum that the harmonization of movement is to be referred. But the above-mentioned facts indicate more than this. There is a degree of *spontaneity* to be observed in these actions, and any attempt to explain them by the reflex theory has been unsuccessful, since they occur when every source of irritation has been removed. In order to prove that the actions observed after decapitation were not dependent upon any cutaneous source of reflex excitement, Volkmann removed the skin, and found that in such circumstances a decapitated frog behaved just as it would have

done with its skin on. Pflueger found that burning the muscles produced no reflex actions.

The following experiment by Pflueger is still more remarkable, as showing the existence of sensational and volitional action in the spinal cord. Whilst a male frog was in the copulation position, embracing firmly with his fore-paws the female frog, Pflueger cut through the spinal cord just below the brain, without causing the male to let go his hold, which he tenaciously maintained when any attempt was made to pull him off. A drop of acetic acid was now placed on his fore-leg. He let go his hold with this extremity, (but kept grasping the female with the other), and, with the hind-leg of the same side, rubbed away the acid, and resumed his embraces with both fore-legs. The female was now forcibly removed, and upon another frog being presented to the male, he drew it to him and embraced it, whilst if he was placed on the back of other moving objects he remained quite quiet! One more of Pflueger's experiments, which seem to be but little known in this country, at least we have never observed any mention of them, except in the work of Mr Lewes, already referred to. In order to prove that the reaction to a stimulus in a decapitated frog is not always precisely the same, Pflueger devised the following ingenious experiment. On the thigh of such a frog, just over the internal condyle of the femur, a drop of acetic acid was placed, and the constant effect was that the animal removed or wiped off the acid, by abducting and adducting the foot of the same side. This being well observed, the foot was amputated and a drop of acetic acid placed upon the same spot: the footless limb was applied as before, but this movement was soon given up, the animal got restless, and finally managed with the foot of the non-irritated side to remove the source of its uneasiness. The objectors to the idea of a sensorium in the spinal cord must experience no little difficulty in explaining such experiments as these upon the theory of reflex or automatic action. Did the movements which follow the irritation of any portion of the skin always resemble each other, we should feel but little difficulty in recognising them as reflex, and we might with Schrœder van der Kolk believe, that every sensitive fibre proceeding from the skin, or a fibre conveying a stimulus from the brain, was so connected with motor nerve cells or groups of cells, that an irritation of such a fibre ended in a purposive muscular act; but when we are told by those who have devoted their entire attention to such subjects, that the act produced by irritating a given spot, varies according to the kind of irritation used, we can scarcely believe that the laws of reflex action would explain such a phenomenon. To illustrate this point—if a decapitated frog has its thigh pinched at a given spot, it either pushes the foot and limb under its belly, or it violently extends it as if to push away the tormenting agent, or if the medulla oblongata be left the animal jumps away. If the same spot is covered with acetic acid the animal performs none of these movements, but by abduction and adduction of one of the legs, it contrives to wipe

off the offending acid. Lastly, Pflueger found, that when animals were etherised before decapitation, this purposive adaptation of movement did not occur, but the movements were regular and quite different from those produced in animals which were not narcotised.

We have mentioned these interesting facts, to warn our readers against being too rash in concluding with our author M. Colin, that the idea of a sensorium in the spinal cord has no real foundation, or is, as Schrœder van der Kolk affirms, an absurdity not to be thought of. In conclusion, we would remark, that in the animal scale there is great difference in the proportion of the different parts of the nervous system. In some there is no brain at all, as in that curious fish the Amphioxus—in which the spinal cord *must* perform the higher nervous functions. In reptiles the spinal cord is greater in size and weight than the brain, whereas in man it is much less. The proportion of the human brain to the spinal cord is as 40 or 33 to 1; in the mouse, it is 4 to 1; in the pigeon, $3\frac{1}{3}$ to 1; in the triton, $\frac{5}{9}$ to 1; and in the lamprey, $\frac{1}{7\frac{1}{3}}$ to 1. These differences may perhaps serve to explain the reason why the spinal cord in frogs, tritons, &c. may serve higher functions than is assigned to it in animals whose nervous system is more complicated and specialised.

Memoir of George Wilson, M.D., F.R.S.E. By his Sister, Jessie Aitken Wilson. Edinburgh: Edmonston & Douglas.

Many veterinary surgeons may read in the volumes before us an account of the life and talents of one of their former teachers. But very brief allusion is made to Professor Wilson's connection with a veterinary school, and, indeed, he never did lecture within the walls of such an institution; but veterinary students attended his private class-rooms, and benefited largely by his teaching when an organization more imperfect than the present existed in veterinary colleges. Professor Wilson played a somewhat conspicuous part on two occasions in connection with veterinary politics. In the first he very naturally defended the amount of chemical teaching his students were favoured by, and the result of his instructions has certainly proved most happy in several instances which have come to our knowledge. The second and last time Professor Wilson contended for the preservation of the Highland Society's illegal board of veterinary examiners. He erred in this; but his error depended on his kind affectionate disposition, as he really spoke and acted in the interest of a friend.

Dr George Wilson was unquestionably a kind, considerate, and enlightened man. Had he enjoyed health and strength, his scientific researches would doubtless have been far more extensive and important. No one, however, can read his biography without being convinced that he was a most accomplished and indefatigable member of the scientific corps of this intellectual city. His conversation

was most entertaining, his anecdotes well said, his language full of poetry, and at all times much instruction could be derived in Professor Wilson's company. His death has made a wide gap in the literary and scientific circles of Edinburgh. Beloved and honoured during life, he rests in his grave lamented; and firmly impressed in the memory of all who enjoyed the privilege of his acquaintance whether as a teacher or friend, and, indeed, by all who at different periods were enchanted by his admirable and highly instructive popular addresses, or met him in the ordinary business of life. To the fair authoress of the work before us, we have to say that she has accomplished her task of love in a manner worthy of Dr George Wilson's sister, and we believe that the Professor's old students in the veterinary profession will peruse the Memoir of his life with great profit and satisfaction.

Dairy Management. By Mrs Agnes Scott. Price 1s. William Blackwood and Sons, Edinburgh and London.

On opening this small work at the wrong end, we found under the head "Appendix," the following prescription:—

"*Cure for Blood-Murrain and all ordinary Diseases in Milch Cows.*

"Dissolve an English pint of common salt in three quarts of buttermilk; give this quantity *three* times, leaving *twelve* hours between each dose.

"If the pasture is very rich, and the disease *blood*-murrain, put a tablespoonful of saltpetre in the *first* dose. If the *dry*-murrain follow, give some porridge, with *two* pounds of hog's-lard."

It was enough to make us close the book at once; but another time, casually looking at the first pages, the remarks struck us as excellent; and though the unpretending pamphlet is destined to let people know how to make good butter and cheese, it shows how a cow should be managed—fresh air, sufficient exercise, good food and water, given so that the appetite may be always sharp, are happily recommended in a chapter full of sound sense. We have only to reject the "Appendix."

EDINBURGH VETERINARY REVIEW
AND
Annals of Comparative Pathology.

THE RIGHTS AND PRIVILEGES OF THE VETERINARY PROFESSION.—VETERINARY MEDICAL ASSOCIATIONS.

That a number of veterinary surgeons can organize a society, of great value to its individual members, and of considerable importance in the constitution of our profession, is clearly proved by the efforts of the Glasgow practitioners. The West of Scotland Association has not yet lived long, and its deeds of honour are few, but its success is a good omen for the future, and must inspire those possessed of some enthusiasm for their chosen calling, in different parts of the country, to exert themselves for a similar object. Scattered widely over the United Kingdom and the Colonies, our still small body of efficient veterinarians is, when contrasted with other professions, learned or commercial, essentially weak. That weakness is entirely dependent on the insufficiency of the means to bring together kindred spirits, and whatever minds we can muster, to think and to act on matters affecting our common interests. The present position of the veterinary profession requires free discussion as much, if not more, than the scientific and practical questions relating to our calling. The West of Scotland Association limits itself, and perhaps wisely for a time, to the latter; but it is quite impossible that a body of men, such as we find met in friendly compact quarterly in Glasgow, should overlook and despise the questions of moment affecting their material welfare.

These remarks are penned with a view to point to the admirable position maintained by the West of Scotland Association up to the present day, and to suggest that, for the objects it has hitherto met, and for more vital purposes affecting our professional status, similar societies should be formed all over the United Kingdom. Never mind if the active members be few. A few will act better together than singly; and, in the course of time, the profession will constitute a strong body, defending its rights and privileges.

It is said that the Royal College of Veterinary Surgeons has done

little for the profession. Does every member of the Royal College ever ask himself what he has done to further its interests, and hence to advance his own? Oliver Cromwell's suggestion—"Trust in God, but keep your powder dry"—has not been acted upon by the veterinary profession; and the result is, that the very life of the latter is sapped by a large intruding body of unqualified men, growing in numbers and importance, in proportion as our agriculture improves, and the nation grows in wealth. Demand creates the supply, and the veterinary profession has, as yet, most inadequately furnished the supply, because there is no limit to intruders. The latter are countless, and this will be, for the first time, proved by the *Veterinary Directory* about to be published.

We therefore suggest, that the active veterinarians in the different counties should bestir themselves. They should, as much as possible, sink petty differences, to work together for the common good. They should meet, as often as occasion may require, for two objects: the first, to watch after their professional interests; the second, for scientific discussion.

Some may imagine that we have mentioned first what should be last; but no less than an Act of Parliament is wanted—an act destined to ensure to every veterinary surgeon the rights and privileges granted to him as a member of a corporate body in 1844—an act which may render it punishable at law to use the title Veterinary Surgeon, except by those who rightly possess it—and an act which may exempt us from jury trials, and prevent an unjust taxation on our horses. We cannot enter into every detail on such a subject here, and it would be inexpedient to do so. We have said sufficient, we hope, to convince any earnest member of his profession that he has a duty to perform, and that a plan is open to him to co-operate for a great and essential object.

"ANSWERS TO CORRESPONDENTS."

The alluring features of empiricism, the pleasant idea of getting advice for nothing, and, on the part of journalists who pander to the foibles of "constant readers" and "old subscribers," the desire to satisfy all, have led to the very objectionable practice of questions being asked relating to the treatment of diseases and injuries of the lower animals, and answers, more or less satisfactory, being given to the simple inquirers. In the interest of the latter, and from a

desire to see agricultural literature expurgated of all quackery and imposition, we allude to the subject as one of the growing evils of the day.

Perhaps some may regard our taking up this subject as quite out of place. We may be considered by them as speaking from interested motives, the journalist's opinion diminishing the number of fees distributed. All we can say is, that by misleading the public by the usual "answers to correspondents" is the way to kill and not to cure. For one case in which any good is done, there are scores and hundreds in which the greatest mischief results; and, looking at the pecuniary side of the question, we should certainly recommend all the papers to start their special Veterinary Department, and we feel quite satisfied that veterinary surgeons would benefit materially.

We approach the subject in the abstract, and wish to ask reasonable men to consider the following questions: How can a person, uninitiated in the veterinary art, diagnose disease? If the recognition of disease is almost invariably impossible to a non-professional person, what reliance can be placed on the suppositions of the latter? Lastly, if the inquirer is, in the large majority of instances, incapable of determining the name and nature of any ailment for which he is seeking a specific, how can the closeted editor fathom the mysteries of that, regarding which he has no certain data, and which may be the subject of innumerable hypotheses?

What would our medical men, and the enlightened section of the community, say to a daily paper appointing a learned physician to reply to letters of anœmic, dyspeptic, asthmatic, consumptive, and a host of other patients, who, paying a penny a-day for general news, might feel inclined to see thoroughly canvassed, by erudite incognitos, the miserable ills their flesh is heir to? Let this question be considered apart from feelings of delicacy which pertain to man's infirmities, and which some ride over rough-shod in advertising Parr's Life Pills and Holloway's Ointment. We venture to believe that sensible men will agree that there cannot be any difference in the two cases. A disease requires the same skill to detect, is liable to the same infinite variety of forms, and calls for the same judgment in diagnosis, and wisdom in treatment, whether affecting man or brute. Let every respectable journalist, then, condemn the absurd and injurious custom of prescribing for the "garget," the "lung complaint," the "bloody water," and the "navicular," which many, in profound ignorance and extreme simplicity, consult him about.

ROYAL COLLEGE OF VETERINARY SURGEONS.

—o—

QUARTERLY MEETING OF COUNCIL.

January 16, 1861.—PRESENT—The President; Messrs Braby, Ernes, Dickens, Ellis, Hunt, Harpley, Jex, Lawson, Moon, Robinson, Stanley, Silvester, Wallis; Professors Spooner and Simonds; and the Secretary;—J. Wilkinson, Esq., the President, in the chair.

The minutes of the preceding meeting were read and signed. A letter was read from Mr Lambert, requesting the return of his examination fee, as he had not appeared before the board, when it was decided that the examination fee be not returned, but that Mr Lambert may be at liberty to appear before any future meeting of the board, by giving the usual notice.

Communications were read from the Foreign Office, accompanied by a number of documents, sent from the Saxon Government to the English Government, for the use of the Royal College of Veterinary Surgeons; and, on the motion of Mr Dickens, seconded by Mr Withers, it was decided that the documents be received, and that the thanks of the Council be given for the same; and that the Council will communicate with the authorities of the veterinary schools, and will not fail, in due time, to forward any similar communications received from these establishments to be sent to the Saxon schools.

A correspondence was read respecting reported applications being about to be made by certain parties, for the institution of a veterinary college or school in Dublin. The secretary had already forwarded to the said parties a copy of the charter and bye-laws of the college. The matter was then dropped.

The quarterly balance-sheet was read; it showed a balance in hand, after defraying the expenses of the quarter, of L.488, 4s. 8d.; and, on the motion of Mr Dickens, seconded by Mr Silvester, it was received and adopted.

The registrar's report was read; it announced four deaths: The first was the senior member of the profession—Bracy Clark, F.L.S. He died at the age of 90; his diploma bears the early date of July 5, 1794; his boast was, that he was the first pupil who led a horse into the Veterinary College; his professional works are some of the most scientific extant; he was, until very recently, the owner of the skeleton of the celebrated *Eclipse.* Simon Mortlake, of Adelaide, Australia—May, 1837; William Cleveland, Army—June, 1852; and Christopher Sanderson—May, 1855. Nine members have been admitted: T. Brooke, Balshorn Camb.; L. W. Walters, Checkly, Stafford; W. Coles, Kilmerston, Somerset; R. Elkington, Brandon, Warwick; W. Dale, Stanmore; W. Bennett, Souldern, Oxon.; R. Sharpen, Gresham, Norfolk; F. Barclay, Wickem Market, Suffolk; and W. F. Chinn, Cardiff, Wales.

Notice of motion was given by Professor Spooner, "That the fee to be in future paid to the respective members of the Board of Examiners be raised from two to three guineas for each attendance."

ED. GABRIEL, *Secretary.*

PERISCOPE.

NOTES ON LAMENESS IN THE HORSE.

By JOSEPH GAMGEE, New Veterinary College, Edinburgh.

(*Continued from page* 41).

Reprinted from "The Field." Revised by the Author.

III. Having devoted two former papers to express my views on the inadequacy of our knowledge as to the principles which should guide the working farrier in the art of shoeing horses, I am desirous to trace farther the causes of this lamentable deficiency. We cannot hope to remove or remedy evils of which we are not cognizant. It can only be done by clearly setting forth the past and present state of the art, and by pointing out some of the many causes that have obstructed, and do obstruct, real improvements. The main causes are traceable to our first veterinary school. On the loss of the first professor, after the lapse of two years from the establishment of that well-conceived institution, instead of its being repaired by returning to the French schools for a successor, (as it was there chiefly that the science had been, for upwards of thirty years, successfully taught and cultivated), Mr Edward Coleman, a young surgeon, was appointed to fill the vacancy. He possessed influence enough to secure his election to the professorship of veterinary medicine and surgery, a knowledge of which he had had no means of acquiring. Still he, and he alone, became the sole professor, propounding and propagating crotchets instead of truth and sound teaching; and most of all was that the case in all that related to the art of shoeing and the treatment of horses' feet. Nor was the misfortune of Mr Coleman's appointment, inexperienced and unqualified as he was, confined to the early years of the establishment of that institution; as a little leaven leavens the whole lump, so were the errors of his teaching diffused and multiplied; nor did he himself relinquish them during the long forty-five years he remained sole principal and professor of the only then recognised veterinary school in Great Britain. Four years after Mr Coleman's appointment, viz., in 1798, he published the first part of his work on the Foot, and four years later the remaining part. Replete with erroneous teaching as that work is, my early impression on looking over it was, that it was a great performance for a young man who had so recently entered the new profession; and even admitting that in his exceptional case he entered it, not as a student, but as a professor, the fact stands the same—the science and art he was licensed to teach were strange and unknown to him at the time of his election. Many years alone could suffice to have acquired, by labour and experience, the material for such a work; but Mr Coleman did not wait for that—the closet gave birth to the work. There was much available material on the subject dispersed over English and Continental literature. Mr Strickland Freeman had also published his excellent work on the Foot, with illustrations, and that work seems to have furnished to Mr Coleman much for imitation. The same able artist was employed to execute the illustrations in the last as had done those for the first work; there was, however, this material difference, that in reading Mr Freeman's work we see the fruits of experience and great knowledge of his subject, whilst in Mr Coleman's work the reverse is manifest in every page. Our chief reason for comparing the two works is, that at no time do we find Mr Coleman mentioning Mr Strickland Freeman's work, either in the delivery of his lectures or in his writings. I can-

not be induced to look upon that omission as accidental, and, until I read Mr Freeman's work, many years after my first studentship was passed, and whilst drifting from one error to another in search of sound rules of practice, I taxed my best feelings to excuse Mr Coleman for the many blunders in his teaching; but after I had read Freeman's work of 1784, and compared it with Coleman's of 1798 and 1802, sympathy for my late professor forsook me.

Besides the works above mentioned, Mr James Clark of Edinburgh had written well, for the time, on the subject of the foot of the horse and shoeing. There were others, among whom may be mentioned the Earl of Pembroke and the Duke of Newcastle, whose works have been quoted by Freeman and other subsequent writers.

Mr William Moorcroft was the man who, at the opening of the present century, as a teacher, practitioner, and writer on the foot, seems to have stood foremost in England. But, for some reasons which I have never heard satisfactorily explained, his valuable services were not retained by the managers of the Veterinary College, though for a while he had been appointed joint professor with Mr Coleman; but, unfortunately for the profession and veterinary science, Mr Coleman assumed the impossible task of teaching a range of subjects which would have required three or four very able men. Thus the young professor was spoiled in making. A long preparatory assistantship might have rendered his life more useful and his reputation more durable. I will not dwell further on the incidents of this early period of our profession. At every glance we see enough mismanagement, not only to account for little success and much disappointment, but to create a wonder that affairs have not gone worse. Mr Bracy Clark, at page 4 in the Preface to his great work *On the Anatomy of the Foot*, thus expresses himself: "Many promising young men were engaged in this profession at the first establishment of the college, who would have succeeded in any of the common occupations of life, but who have sunk under the difficulties of this."

Great as have been the evils handed down from so much bad management of the early years of the veterinary school at London, that epoch is not the only one, or that most to be complained of. Coleman had been consistent from the beginning to the end of his career. Lameness in horses and defects in the art of shoeing were the crying complaints at the time he was promoted to preside over the destinies of the profession. These evils formed the chief topics of the day; the ablest men, both in England and on the Continent, who had written on subjects connected with the veterinary profession, had devoted their attention to the art of shoeing and the evils thence resulting, and Mr Coleman, though a young man, was a good tactician, took up the general complaints, thenceforward made the subjects his own, and adopted them in his works and in all his addresses to his pupils. The following passage, which I take from the first part of his work, p. 10, which I have constantly heard him repeating in his latter years, tended to excite the ardour of his students, even though his teaching did fail and misled most lamentably. He said, "A proper mode of shoeing is certainly of more importance than the treatment of any disease, or perhaps of all the diseases, incident to horses." Clearly, then, with such admonition, it was the duty of Mr Coleman's successor to have learned from all available sources, and, instead of damping the energies of the profession, to have provided new material; to have looked to our neighbours and all around; doing what a commercial firm would do—if they did not possess the required talent, they would procure it wherever it could be found. What did they do? Why, just the reverse. The second principal professor, Mr Sewell, may be exonerated, as he was an old man, in declining health, when the principal professorship was conferred on him, and he was only fit to enjoy the honours, whilst young and energetic men, who had been trained in a wider field, should have been invited to supply the required want in teaching. We come now to the third and last epoch—to the present state, when the whole subject has been abandoned to chance, or worse than that. The students of veterinary medicine have been told that the shoeing of horses is a vulgar art, that it has received more attention than its importance merits, and that to place a band of iron round a horse's foot is not a calling for an educated man. They exclaim that it is the connection of

the anvil with the veterinarian's calling that has lowered the profession. This is the doctrine which has of late years been promulgated at the Veterinary College of London, and, adopting the words of our late talented friend, James Turner, "it is the most suicidal of all that I have to complain of." Coleman taught much error, but he advised well; and the tendency was to cheer his followers into action; as Saintbel's teaching in a short time left us a Bracy Clark, so did Coleman's general precepts at least furnish us with the late John Field, William Percival, James Turner, and some others happily still amongst us, who have, notwithstanding all difficulties, done honour to the profession. But, at present, what is doing? Why, a gentleman, one of the subscribers to the college, a large proprietor of horses, and a man of business in London, exclaimed, not long since, in my hearing, "England is renowned all over the world for the superiority of her horses and cattle, whilst her Veterinary College is the laughing-stock of Europe." To which he added, "I don't know what is to become of it, (meaning the school); I think it must die a natural death."

Coleman's teaching excited an appetite for learning, though the food supplied was both deficient in quantity and defective in quality; but the present teaching so disgusts the appetite, by holding up to young men just embarking in their profession, the vulgarity of so important a branch of their calling as the art of shoeing undoubtedly is, that the desire to learn is discouraged. The sources of such sentiments are false pride and laziness; the consequences are a multiplicity of evils.

IV. My three preceding papers may be considered as preliminary to the subject announced for consideration, viz., lameness in horses.

It may be expected that I, who find so much to complain of in the present state of the art of shoeing horses, should be prepared to advance something clear and positive for future rules and practice. Earnestly as I hope to contribute some part of the required advice and instruction, I am sensible that little will be achieved but by the co-operation of many. It is not a given form of shoe, with a prescribed number of nails to apply it to the foot, after rasping and paring the latter, as is generally laid down in books, and which is more or less carried out in practice, that will establish the art on a scientific basis. It has already been said that pain in horses' feet and its symptom, lameness, is mainly due to shoeing; and shoeing, as all know, is necessary for their protection from wear, from blows and pressure on hard artificial roads, and under the exertion to which the horse has been made subservient for the uses and pleasure of man. Thus the art of shoeing has been defined as a necessary evil, which definition I may use for want of a better. It is the reduction of that evil to its minimum amount as to number of cases and degree of lameness, to which every one who wishes to cultivate the science and art with success, must keep his attention directed. It cannot fail to strike many who have not hitherto paid attention to the subject, that a correct knowledge of the anatomy of the foot, and the functions of that beautifully complex organ, taking it in its relation to the limbs, and with a full appreciation of these all together, is necessary in order that this subject may be studied so as to be understood. This has generally been conceded to be the province of the veterinary surgeon; and even granting that this part of the teaching and study had been amply cultivated at the English veterinary schools—a supposition in which I share no part—still, how could such knowledge affect the art of shoeing, performed by a distinct class of men, who are held in degradation and abeyance by those who presume it to be their province to direct? Has experience not taught us that such division of knowledge and work could bear no fruit? All comparison by those who have paid attention to education in general would tend to convince us that the theory and practice of the art cannot be disunited.

My conviction is, that learning only comes by doing; that the hand forms one of the high roads to the mind more impressive and lasting, perhaps, than impressions conveyed through the eye or the ear, but all combined are given for us to avail of. Men have been supposed to understand and direct how a horse should be shod who have never taken any part in the manipulation of the art, and who

have had no other instruction than that conveyed in a few lectures, repeated session after session, at an interval of a twelvemonth. On the other hand, the working farrier has received no instruction at all, beyond what has come from hard hammering and the sweat of his brow; and he works without a gleam of light to instruct and call out the faculties of his mind. Thus, two individuals so uninstructed do not form one efficient man. Whether we take into account the calling of the veterinary surgeon, or that of the working shoer, each requires learning and time devoted to it, which has not yet been given at English veterinary schools. Having dwelt longer than I had intended on the first parts of my subject, I shall endeavour to convey some notion of the rules I adopt. These, in the main, are the same for different classes of horses, though when we come to their details we shall find much difference to point out in practice. Besides taking into consideration size, breed, and form of the horse, we must regard the use also to which he is applied—pace, weight of draught, and the surface of roads on which he works. The mechanical workman who is employed chiefly in shoeing a particular class of horses—say cart or race-horses—will shoe the one better than the other from habit, whilst the man who has learned thoroughly and by proper rules will be able to apply them equally well to all classes of horses.

In taking the foot of any horse as an imaginary model of perfection, one that has not been shod has usually been selected; that, however, is no more a proof of perfection than that of another, which has been many times well shod, is of imperfection: both are relative. I will not here dilate on all that presents itself to my mind as to how horses should be so bred and treated as to have their feet developed to the greatest state of perfection. This, however, is a most important question as to their durability under work, shoeing and other circumstances being the same. The stable-bred colt, that has had no liberty to give form to his feet, his joints, nay, to his whole body, by that voluntary exercise which alone can do so, is liable to fail in different ways under the best management. Again, many of our most valuable blood stock are not allowed liberty of action, a sufficient time for their feet to have received a degree of development to admit of the art of shoeing being applied with perfect impunity. On this I shall say more when I come to treat of shoeing race-horses. The perfect shoeing of a well-developed foot defends it from external injury, and admits of freedom and ease in all its functions, as if no shoe were applied.

CORRESPONDENCE RELATING TO "ECLIPSE."

To the Editor of Bell's Life in London.

Mr Editor,—Having seen in the *Life* some observations on the skeleton of Eclipse, as well as some remarks or conjectures on that horse's merits, I will, if you please, give you a few particulars relating to him that may not be altogether uninteresting to some of the many of your present day readers. All we can possibly know of Eclipse must be from tradition, and perhaps John Lawrence, in his *History of the Horse*, is most worthy of our notice, as well as most to be depended on. He informs us that Eclipse was the best horse of his day—of the truth of which there is little doubt. However, the old maxim may not (even in the case of Eclipse) be misapplied, viz., "Tell me the company you keep, and I will tell you what you are;" to elucidate which I have given the whole of Eclipse's engagements, together with the names of the horses he beat, showing the company he kept. Eclipse was withheld from the course until five years old, and terminated his career as a race-horse at six. He is described as a chesnut horse, with a white off hind leg up to the hock, and a white reach down his nose. He had a thick, but well-placed, shoulder. His hind-quarters, or croup, appeared higher than his forehand. He was long in the barrel, and stood over much ground. He was looked on as a coarse horse, thick winded, and breathed hard and loud in his gallops, yet he was never beaten or distressed by the speed of any competitor. He outstrode and outlasted every horse which started against him without experiencing the stroke of a whip or prick of a spur.

Eclipse's maiden race was at Epsom, April 3, 1768. It was for the Noblemen and Gentlemen's Plate of L.50, for horses that had never won L.30, matches excepted; five-year-olds, 8st, six 9st 3lb; aged, 9st 13lb; four mile heats. Won by Eclipse, distancing the four horses that started against him, viz. :—Gower (ran twice and was beaten both), Chance (ran twice and was beaten both), Trial (ran 3 times and lost 2), and Plume (ran 6 times and lost 5). At Ascot, May 29, Eclipse won L.50 Plate, two mile heats, beating Cream de Barbade, who ran 11 times and lost 6. At Winchester, June 13, Eclipse won King's 100 Guineas, four-mile heats, beating Slouch (who ran 5 times and lost 4), Chigger (ran 15 times and lost 10), Juba (ran 5 times and lost 4), Caliban (ran 8 times and lost 4), Clanvil (ran twice and lost both). June 15, Eclipse walked over for L.50 Plate. At Salisbury, June 28, Eclipse walked over for the King's 100 Guineas; 29, Eclipse won the City Plate, or Bowl, beating Sulphur (who only ran once). At Canterbury, July 25, Eclipse walked over for the King's 100 Guineas. At Lewes, July 27, Eclipse won the King's 100 Guineas, beating Kingston. Kingston ran 3 times and lost 2. At Lichfield, Sept. 19, Eclipse won the King's 100 Guineas, beating Tardy, who ran 8 times and lost 4. In 1770, April 17, at Newmarket F. S. M., Eclipse beat Bucephalus, Mr Wildman staking 600 to 400; B.C. Bucephalus ran 3 times and lost 1. On the 19th, Eclipse won King's 100 Guineas, four-mile heats, beating Pensioner (who ran 5 times, losing all), Diana (ran but this once), and Chigger (ran 15 times, lost 10). At Guildford, June 5, Eclipse walked over for the King's 100 Guineas. At Nottingham, July 3, Eclipse walked over for the King's 100 Guineas. At York, Aug. 20, Eclipse walked over for the King's 100 Guineas. At York, 23d, Eclipse won Great Subscription of L.319, 10s., beating Tortoise (who ran 20 times and lost 9), and Bellario (ran 30 times and lost 12). At Lincoln, Sept. 3, Eclipse walked over for the King's 100 Guineas. At Newmarket F. O. M., Oct. 3, Eclipse won 150 Guineas, beating Corsican (who ran 12 times and lost 9). Oct. 4, Eclipse walked over for the King's 100 Guineas.

The foregoing is sufficient evidence of the company Eclipse kept, as well as the wretched bad lot of horses he beat, with few exceptions. I should say he must have been a fortunate horse in meeting such indifferent competitors. It will be seen that he ran 10 times, and walked over 8. Had races been timed as accurately then as they are now, we might have arrived at more satisfactory conclusions. I have seen nearly all the best horses we have had since 1814, and am of opinion that many of them would have proved quite equal, if not superior, to Eclipse. It must not be forgotten that the horses of the present day leave off where he began—I allude to age.—Yours, &c. J. F. Herring, sen.

Meopham Park, Tonbridge, Kent.

Mr Editor,—My attention having been drawn to a letter in your journal of the 16th inst., headed "Eclipse," bearing the signature "J. F. Herring, sen.," I shall be obliged by the favour of space for the following remarks:—Mr Herring has made statements which are new to us, and he has reproduced others that have become old. When he says that Eclipse was higher behind than before, he only repeats an often-told tale, without an atom of evidence to support it, and which, many years ago, used to be cited by a then reputed veterinary teacher, who pronounced that assumed form, viz., short and low forehand, with high posterior regions, to be the right form for speed and power. Mr Herring tells us that Eclipse "had a thick but well-placed shoulder, that he was looked on as a coarse horse, thick-winded, and breathed hard and loud in his gallops." Mr Herring suggests other ideas quite new to us. As regards Eclipse's performances, when measured by the standard of his competitors, he assumes that the horse was lucky, insomuch as he always ran in bad company; and the reason assigned for coming to such conclusion is, because his competitors had been beaten in some of the races they had run. With regard to the notion that Eclipse was of that exceptional form, we have long discredited the reports promulgated, and we are in a position to assert positively that that was not his form, any more than that

his two famous great grandsons, Whalebone and Tramp, were so shaped. The skeleton of Eclipse in our possession, still connected by its ligaments, is proof that Eclipse was a horse of the most perfect symmetry, so much so that the wonder excited by traditional reports of his performances becomes explained away, and ceases to be a wonder, when we examine and compare *his* with skeletons of other horses.

Perhaps some of Mr Herring's readers will better understand than I do what is meant by "a thick but well-formed shoulder." His being looked on as a coarse horse is to us an originally discovered feature in Eclipse's character, and again we fail to find the assumption supported by evidence of any kind, but quite the reverse, especially when we regard his beautifully-proportioned head, the part in which what horsemen call coarseness is generally most manifest. Neither do we remember hearing of coarse descendants from Eclipse. We have heard of the beautiful Gohanna heads, recent specimens of which may have been seen in Venison and his son Kingston; these are fair types of the Eclipse head. Besides his skeleton, on which our opinions are founded, looking at Stubbs's picture of Eclipse, we can see nothing coarse or monstrous in his form. Mr Herring tells us Eclipse was "thick-winded, breathed hard and loud in his gallops." We are then told that "he was never beaten or distressed by the speed of any competitor—he outstrode and outlasted every horse that started against him, without experiencing the stroke of a whip or prick of a spur." We will venture to substitute conjecture for positive proof, by pronouncing the loud noise which Eclipse is said to have made in his gallops to have been of that kind which we have known many of his lasting wiry descendants to evince, viz., a fluttering of the nostrils when going up a gallop, which probably in the case of Eclipse, from the large capacity of his chest and corresponding space of nostrils, would have been such that on a still morning, he might have been heard on Newmarket Heath or Epsom Downs at the distance of half a mile or a mile when going over his gallops. Eclipse and many of his descendants made just that noise that bespeaks high qualities in a race-horse. It is a noise that is not heard in the race when the breathing apparatus is called into full action. The Eclipse noise ceases when the exertion becomes such as would distress and stop the thick-winded horse.

In conclusion, I submit that, for anything adduced in Mr Herring's letter, Eclipse's merits must stand, as they have done, on the unshaken merits handed down to us, and for the following reasons:—That Eclipse's competitors were beaten in some of their races only proves that there were many horses at the time that could race, and is no more evidence of their inferiority than that because Lanercost, Beeswing, Alice Hawthorn, Fisherman, Rataplan, as well as most of the best race-horses, having been sometimes beaten, are to be classed as but moderate horses. That Eclipse met good horses, beat them all, and distanced most of them, are in our opinion as much established truths as history can furnish. It is not out of mere speculative curiosity that I approach this subject. I believe it to be one that has its very useful bearings, worthy the reflections of future breeders of horses. Nothing is more calculated to mislead than attempts to under-estimate the worth of English horses of former times. Long before the renowned Eclipse existed, England possessed magnificent horses in considerable numbers; her princes and nobles were the chief cultivators of the pure blood-horse. Horses were well managed, and their powers understood by Englishmen, at least during the whole of the last century. Reports handed down, relating the extraordinary merits of Flying Childers, are the more reliable, because we see other horses of great repute mentioned contemporaneously, as well as antecedently and subsequently, to the epoch at which that horse ran. Again, in reference to Eclipse coming at an epoch about fifty years nearer to our own time, and he being a horse that lived in the memory of men whom we have known, we have, I think, ample guarantee that his superior qualities have not been exaggerated. It is to be borne in mind that the same noble names which adorn the list of the Jockey Club now presided over and regulated races at the time of Eclipse. The Lords Derby, Grosvenor, Bolingbroke, with a host of others, might be referred to; and why, in the knowledge of all, should the tales about Eclipse be fictitious, and

why should Eclipse have been selected, and not some other horse? Matchem, Herod, or one of the famous horses near Eclipse's own time, might have been selected for commemoration. Highflyer, Shark, Hambletonian, Diomed, or some other horse, might have been selected if any motive other than full proof and the whole truth had prevailed. But no; good as the aforenamed horses were, Eclipse was pronounced to be superior to any known horse since the days of Flying Childers. As to the relative speed and power of the best horses of the present day as compared with Eclipse, that can only be approximately understood by men who have more opportunities and knowledge on such matters than I possess.—Yours, &c.,

JOSEPH GAMGEE.

New Veterinary College, Edinburgh,
December 31.

P.S.—Since the above was penned, I have read the interesting communications in your current number by "Hippos."

THE WARRANTY OF HORSES.

To the Editor of Bell's Life in London.

MR EDITOR,—There is no subject, I believe, better deserving the attention of all interested in the selling and breeding of horses than this. It is a matter that I should, I am sure, with thousands of your readers, be well pleased to see thoroughly canvassed in your columns. There is much that is foul about it, and no subject stands in greater need of ventilation. The law of horse warranty is excellent; it is of the abuse of it of which I complain, and so great is the abuse, and so extensively are the well-intentioned public swindled by it, that I maintain it is full time the present law, or rather custom, was changed. By the present system, after selling a horse that you may have had many years in your possession, without knowing of either fault or failing, the chances are that four or five weeks after you have parted with him a letter officially announces to you that your horse has a speck in his eye, one foot larger than the other, or grunts a little, has spavin in both legs, is a wind sucker, has flat feet, or splints, &c., &c.; is, indeed, an animal that you are puzzled to think was ever in your possession. The letter generally contains veterinary surgeons' certificates, notice that the animal stands at your expense, and that your check will oblige. What is to be done? It has happened to the writer that on arriving to examine the horse he found him sold. "Oh," said the dealer, "he was a little sore on his soles, but it has gone off again." In this case the veterinary surgeon certified that the horse suffered from navicular disease (sound now, because sold at a profit). You were very simple to be done after this fashion, some of my wise readers will exclaim. Ask some of your bright friends who have done a little in the trade if they have not been similarly martyred, or on arriving at the dealer's establishment you find your horse, but cannot perceive that he is lame or his wind affected, and you obtain a veterinary surgeon's opinion coinciding with your own. No matter; "doctors differ," says the buyer of your horse, "and you must either refund me the price of the horse or stand an action at law." And what is the meaning of all this? Simply that your friend, the dealer, knows that such a trial would cost the winner the price of an average horse, and after a little bush-beating he gives you to understand that he is quite willing to listen to reason. "Give him L.50 and have no more squabbling about it," is the summing up of what he has to say to you. Was the horse unsound, this is all very proper; but what is your mortification in finding that your horse has gone into other hands in a week or two, warranted all right to a superlative degree. This is no imaginary case; I could give a dozen instances of it in an experience of not many years. But some one will say, Go to law. Such an individual will, if ever he tries it, learn by experience, and a dear school he will find it. Go to law, indeed! Have college against college, have veterinary certificates by the dozen in direct opposition to each

other, have hard swearing to your heart's content, and find in nine cases out of ten, that the practised rogue is more than a match for the honest man. The returning of horses has become a trade, and I could name dealers who in their cups can boast that they make their hundreds a year by a little scribbling before breakfast. But people are getting sick of the present system, and refuse to warrant a horse on any conditions. This is a second evil, arising from the first. Why cannot we adopt the Irish custom? Take a veterinary's opinion when the horse is sold, and if he is passed right you are done with him. This is what the writer of this letter has determined upon, after having full experience of the swindling practised by the present system, and he strongly advises all breeders of horses to do the same. In conclusion, let it not be supposed that horse dealers are all of the stamp I have described; there are as honourable and straightforward men to be found amongst them as exist; but that the warranty of horses as it now is conduces to fraud, and to the disadvantage of upright men, is the opinion of yours, &c.

FAIRPLAY.

MR EDITOR,—Your impression of yesterday contains a letter signed "Fairplay," and headed, "The Warranty of Horses." The beginning and the ending are both important subjects to deal with, especially in horse matters. It is supposed by most persons that all those who sell horses, and even those who are in any way connected with horses whether veterinary surgeon or horse dealer, must *necessarily* be roguish, or fond of playing tricks. I know there is too much truth in it. At the same time many reforms have occurred during the past twenty years in the horse dealer's establishment, as well as in the "Vet's" sanctum. It is to be regretted that the profession has not, ere this, concocted and established a proper code of rules or laws, by which all persons dealing, either professionally or as amateurs, should understand upon what basis horses are tranferred from seller to buyer. It appears to me to be one of the simplest of subjects to treat, viz., the soundness of horses. I cannot help thinking that some cause must be in operation to prevent the members of the veterinary profession from coming forward to put a stop to such scenes, which are too often witnessed in courts of justice. Cases have been cited to show the fallacy of horse *warranties;* and cases are upon record which prove that "Vets" are not to be relied upon so long as the present system in in full force. If you refer to the *Veterinarian*, in the year 1857, you will find the subject—unsoundness—discussed by several "Vet's." The remarks, so far as they travelled, were good, but what has been the result? Nothing. We absolutely remain *in statu quo.* Follow on the same work for '60, and you will read another paper by a nameless "Vet" of '45. At page 203 reference is made to the report of the trial *Ducie v. Hopwood.* This case must, I think, be so well remembered that it will be only necessary to state, for the information of any of your readers who don't happen to be blessed with good memories, that several veterinary surgeons were examined as witnesses in the case alluded to; it was one of spavin. Some, for the plaintiff, swore the animal *had a spavin, and was lame* at the time the trial was actually proceeding at Westminster Hall; others swore the horse had *no spavin*, and was *not lame.*

Now, sir, in the face of all this swearing, what can be said? If you read further on, at page 205, you will see what this nameless "Vet." advises should be done in all cases. He asks the following very important question:—"What constitutes a *sound* horse?" His answer is, "An animal *without* defect." Again, he asks, "Is such an animal to be found?" Answer: *Very seldom*, but approaching perfection often." He goes on to state that the plan he advocated upon some former occasion was to pronounce every horse *unsound* which was found to have blemishes, either natural or artificial; or, in other words, which was affected with spavin, splint, enlarged bursa, curb, ringbone, thrush, corn, &c., &c.; in fact with *any* disease, and that the veterinary surgeon should be expected to report upon the *nature* of the disease in question, when an animal was produced to him for examination. This would at first seem impracticable, but upon

reflection it will soon seem apparently easy. Those who are in the habit of examining horses as to soundness, and more particularly those "Vets." who attend at fairs in Ireland, are in the possession of more information with regard to soundness than those who ride about from farm to farm in their ordinary English practice, where the question of soundness is seldom canvassed except in a breach of warranty case. Here, in this country, no horse is purchased without the opinion of some practitioner, whether good, bad, or indifferent—whether qualified or unqualified. Hence it is proved by such opinions much litigation is prevented. The lawyers don't know much about horse business, and, if I am not much mistaken, Oliphant's work on *The Law of Horses* does not grace the library of one member of the legal profession in a hundred. So much for the knowledge of law. In this country the "Vet." is really acting in the capacity of an adviser. Now comes the knotty question, What remedy have we for preventing all the nonsense and false swearing in the courts of law? Do as your Irish neighbours are doing. Those who purchase, let them employ a respectable man to give an opinion. This brings me to the most important and trying question of all, viz., soundness. What is soundness?

At page 51 of Oliphant, Chief Justice Best, in the case of Best v. Osborne, held that "sound" meant *perfect.* Mr Baron Parke said (in same page); The word "sound" means what it expresses, namely, that the animal is *sound* and free from disease at the time he is warranted. Mr Baron Alderson said: The word "sound" means sound. Above you have the definitions of *three able lawyers.* We will work out the problem by premising that those whose opinions are here given are correct in their definitions, viz., that "sound" means perfect, &c. An animal, to be *perfect,* must have *no* disease present, either hereditary or produced by accidental or other causes. This seems imperative. Take, for example, the case of "splint." Oliphant writes, in page 83, "It entirely depends on the situation of the bony tumour on the inside of the shank bone whether a splint is to be considered an unsoundness." This is very good authority; in fact, I believe the only authority we have. How does this avail in practice? What "Vet." can tell the *exact commencement* and *termination* of some cases of splint? I will answer, *Not one can do so.* This appears startling—it is *true,* nevertheless. I will defy any man to state *with accuracy* the situation of *all* cases of splint. I am writing advisedly, and am most anxious to be understood. There are many cases which are *easily* defined. If, then, what I have written be true, it will, I think, in some measure explain how it is doctors differ, especially as witnesses in courts of justice.

What is the remedy? Answer: Consider *everything* in the nature of disease *unsoundness,* so long as it exists, and call upon the examiner to give an opinion as to the probability of its interfering with the usefulness of the animal, and by his opinion let him stand or fall in the good or bad opinion of his employers. It must be seen at a glance that if this system be adopted by the profession, they will have to mark the distinction, viz., legally sound, or legally *un*-sound, *usefully* sound, &c. If, as is generally believed by the members of the profession who attend at horse fairs, that ninety-nine horses out of every hundred are *un*-sound, sooner or later some such plan as I have feebly advocated must be adopted. It is high time that people awaken from their slumber.

I have to apologise for drawing so extensively upon your indulgence; the subject is one of such grave importance, that in order to do justice to its merits, much time and space must be used up in its discussion.—Yours, &c.,

Dec. 17. ALPHA.

SIR,—The letter which appeared in your columns last week relative to the grievances of the existing custom or law of "horse warranty" embraces a subject momentous in its details to all private persons who breed horses as a speculation, or whom circumstances may induce or compel to dispose of animals that they believe to be sound. It has been clearly shown by your correspondent that the public are open to victimisation at the hands of unprincipled persons. I have

myself been a sufferer, and, as such, I hailed with intense satisfaction an announcement emanating from London that a "horse register" existed which offered novel and desirable facilities to both buyers and sellers of *sound* horses. I made inquiries, found the business conducted by an accomplished and straightforward gentleman. The requirements made of me were that I should pay 5s. for advertising my horse in the monthly publication of the firm, under whose name it is conducted; that I should permit an inspection by a V.S., or warrant my horse sound; and that I should pay 1s. in the pound on the price published as the lowest I would take in the event of a sale. All this appeared to me to be reasonable and eligible. I agreed to the above stipulation, returned home, and within five days I had sold my horse at a very liberal figure, the firm through whom I found a purchaser releasing me from all responsibility, my horse having undergone an examination by one of their "Vets.,"and passed sound. The value of your space, and the ready perception of that class of your readers to whom this announcement more directly applies, prevent me from indulging in any remarks further than this, that I am one who thinks that much credit is due to the spirited projectors of an undertaking fraught with the most important considerations to all keepers and breeders of horses, to morality, and to the country at large. It is a mighty and potent effort to purge from out the horse trade the rottenness and vice that have so long tarnished it, uncontrollable by the praiseworthy efforts of many in it to steer a straight course.—Yours, &c., JUSTITIA.

PLEURO-PNEUMONIA IN NORWAY.

(*From the North British Agriculturist*, Jan., 1861).

In the month of August last, an agent sent by the Norwegian government, purchased a number of cattle of the Ayrshire breed, heifers, cows, and bulls. The purchases were made principally near New Cumnock and Old Cumnock—the highest part of Ayrshire. Several of the animals got prizes at the Highland and Agricultural Society's Show at Dumfries.

As the importation of cattle from Great Britain as well as from other countries, where pleura-pneumonia was known to exist, is prohibited in Norway, special permission was granted for the occasion by a royal decree, which also contained precautionary measures against the introduction of animals infected with the said disease.

The agent had his attention particularly directed to the importance of only purchasing animals which could not be suspected of having been exposed to the infection of pleura-pneumonia. All the bought animals were said to be in perfectly healthy condition, and they were examined by veterinary surgeons. But neither on that occasion nor upon a new examination which took place after the arrival of the cattle in Norway, were the symptoms of pleura-pneumonia discovered in any of the animals. Nevertheless, in the commencement of November pleura-pneumonia broke out in the herd at the Royal Agricultural College, where the said animals were stationed. Since, the disease has continued to spread in the herd, attacking animals of Norwegian origin as well as the newly imported Ayrshires, so that up to the date of the latest news, 20th December, 30 out of the 60 heads, constituting the herd of the establishment, have died or been killed.

Hitherto, Norway had been exempt from the devastations of this cattle plague. The agriculturists as well as the veterinarians of that country will, therefore, be without practical experience as to the right way to proceed in order to keep the disease within the narrowest possible limits. Under these circumstances it would be of great importance to all parties in Norway, who are particularly interested in the affair, as well as to those who shall have to decide upon or carry out the measures necessary for the prevention, if possible, of the spreading of the disease, if sound practical information concerning the treatment of cattle affected with pleura-pneumonia, in a country where the disease has prevailed, were furnished to guide the Norwegian authorities.

I have, during my travels and my long stay in this country, had a rich opportu-

nity to experience the readiness of Scotch farmers and others to come forward with good advice in cases where it can be of use to foreigners, and I feel therefore convinced that any appeal to them on this particular occasion will not be unanswered. I have, under these circumstances, thought that nothing could better lead to the desired result than an appeal inserted in such an extensively circulated medium as the *North British Agriculturist.* You would therefore oblige me by giving the present a place in your next number, and recommending it to the attention of your numerous readers and correspondents. Any information concerning the subject will, if forwarded to my address, be received with gratitude, and especially I should wish to get the subjoined questions answered *with the shortest possible delay.*

The following are the questions concerning pleura-pneumonia :—

1. Can pleura-pneumonia be transmitted from an infected to a healthy herd through the medium of human beings, when no other communication takes place between the cattle ?

2. Can hay, straw, and similar things, which have been in contact with an infected animal, transmit the infection to a healthy herd ?

3. Or is it necessary, in order to cause infection, that the same atmosphere should be inhaled by the healthy animal as by the diseased one ?

4. Are there cases of final and complete recovery of animals in which pleura-pneumonia was so far developed that there could be no doubt about its real character ?

5. Which treatment should be adopted with animals in the first stage of the disease ?

6. What is the best mode of treatment of animals in which the disease has reached a higher degree of development—second and third stages ?

7. Which is the best way to purify byres, where the diseased animals have been, before healthy animals are again placed in the byres ?

8. When the disease has been got rid of by slaughtering the whole infected herd, or otherwise, and when byres have been well purified, would it be advisable to wait a certain length of time before a new stock be introduced ?

9. What measures should be resorted to in a country where pleura-pneumonia never formerly existed, in order to eradicate the disease introduced by the importation of cattle, the disease being still confined to the said herd ? And

10. What ought to be done if already some of the neighbouring herds had commenced to show symptoms of the infection ?

ANTON ROSING.

Edinburgh, 22, Dundas Street,
31st Dec., 1860.

Repertorium der Thierheilkunde. Vol. xxi. 1860.

I.—TREATISE ON ACARUS FOLLICULORUM, CAUSING EXANTHEMA OF THE SKIN IN THE DOG. By Professor WEISS.

MY attention being drawn to the 20th vol., 81st page, of this repertory, by some communications from Professor Haubner, of Dresden, relating to acari, in the summer of 1859, I made some investigations concerning the above-mentioned acari on a small pregnant bitch, under treatment at the Stuttgart veterinary school.

The greater part of the body of this animal was raw, viz., the back, belly, upper part of the paws, and of the head, neck, and tail. The skin was covered with small excrescences, mostly containing a thick ichorous fluid, and desquamation of the cuticle had taken place; as yet, there did not appear to have existed any

unpleasant itching sensation to excite rubbing or scratching, for the patient seldom scratched herself, and there was no wound to be seen on the skin from friction; otherwise she appeared lively, in good condition, and fed well. After the epidermic cells had been removed, by means of a blunt knife, there were only few acari to be seen; but, if any of the excrescences were punctured at a yellow spot on their centre, and the point of a needle, moistened with this ichorous fluid, put under the microscope, with a little water, vast numbers of these acari became visible, in different stages of metamorphoses, some only partly developed, others perfect, thus some containing ova, and also detached ova, of an elongated form. Their vitality could not be detected, and they appeared dead.

For the benefit of those who have not as yet become acquainted with these acari, it may be briefly stated that, microscopically, in the dog, their length is from 1-14th to 1-8th of a line, diameter from 1-80th to 1-40th, and they are found in the hair follicles and sebaceous glands. After they have attained their full development, they become furnished with six or eight, or more, short legs; situated at the anterior part of the body are the feet; on each side of the head is a bifurcated antenna; their muzzle is of a reddish colour; and have a triangular mouth. Their head and breast run immediately one into the other, and their body terminates in a somewhat long and thick tail.

These acari, up to the present time, have only been found in the dog, and, on on one occasion, in the sheep.

The hair on those parts where it is stated to be found is easily pulled out, but does not easily fall off. An acarus is often seen along the root of one of these hairs; the movement of its feet appears to be very slow.

Whether any one particular species of acarus found in the dog resembles those occurring in man has not yet been ascertained; their resemblance is certainly very great; and Gruby, on one occasion, attempted to transfer acari from man to the dog, and observed, that in two years they had so increased in number in this animal, that their presence was detected in every follicle in the skin; that the dog had completely lost all its hair; and that the skin was consequently bare. One objection can certainly be raised to this experiment, viz., that the dog was not examined to see if any acari previously existed. Did these acari belong to any particular species? if so, it may be interesting to know that one parasite has been discovered common to the skin of both man and the dog. As regards their resemblance, the fact may be induced, that these acari in the dog produce a different effect from those in man; in man most of these parasites are buried under the skin, and without their presence being known, it is looked upon as an accidental occurrence. As a rule the skin does not show the least change in appearance, and suspicion is only excited in those instances where they cause exanthema from their enormous increase.

Thus they are found in the sebaceous follicles of the skin, on those parts denuded of hair, as well as where the hair still existed; in the skin of the nose, lips, back, and forehead; in the skin covering the external ear and nose; whilst the acari in the dog occupy those parts still possessing hair, causing important changes in the skin.

On this account they must be looked upon as very injurious, viz., producing a gradual baldness of the skin, and being the exciting cause of the falling off of the hair—destroying apparently the germs of the skin, so that any reproduction of hair from the old follicles is impossible. In the case of the dog above mentioned, which was under my notice for some weeks, there was no sign in any part of the hair growing again.

In addition to this, it is very difficult to destroy these acari by any application. In this case at least, after several weeks' treatment, the condition of the skin was in no way improved, on account of the acari becoming buried deeply in the skin. Perhaps they are possessed of more latent life than other parasites. The dog was washed several times with soft soap, and afterwards dressed with creasote ointment (creasote 1 part to 20 of lard), but without effect.

The acari were not destroyed by these applications, for other acari became de-

veloped on the roots of the hair. Haubner also tried, in the case of the dog under his treatment, repeated washings with soap and caustic solutions, dressing with collodion and ointment of manganese, but all in vain.

During the treatment the bitch aborted, and expelled a fœtus about six weeks old. She then began to ail, whereupon a complete change in the condition of the skin took place; the little pustules containing the yellow ichorous fluid disappeared; the skin became smooth, and extraordinary desquamation occurred. The acari were dead and shrivelled up. The bitch gradually regained her strength, and continued to improve.

A few weeks afterwards, another young dog of the Danish breed was put under treatment for exanthema of the skin. On examination the above-mentioned pustules were found upon the skin, but not to any great extent, and only contained a few acari. But as the animal became attacked with distemper, and unexpectedly died soon, no further examinations or experiments could be undertaken.

That the acari can be transferred to other dogs, there becoming developed, and produce the affection above described, there can be little doubt. Still it appears very easy to deny the contagion of this affection, as the bitch lived with several other dogs of different breeds for a week and fortnight together, and still no exanthema showed itself in any of these animals.

The experiment of inoculation undertaken by Haubner did not remain permanent. After the elapse of 24 hours the part inoculated became thickened, accompanied with a certain amount of heat: 48 hours afterwards pustular induration took place, from which oozed a thick purulent secretion, which, like a portion of the skin, contained numbers of acari, likewise young ones and eggs. A second experiment on the same animal was followed by a similar result. In both cases at first there was merely induration of the inoculated part; afterwards spontaneous healing took place, and the acari disappeared.

Exanthemata in the dog, due to the presence of these acari, hitherto have generally been overlooked, and mistaken for ordinary mange. As yet it is not met with in any hand-book on pathology, except in Roll's work on *Pathology and Therapeutics of the Domesticated Animals*, Vienna, 1856, p. 668. The diagnosis of these cases by the aid of the microscope is rendered easy and simple, the only question is, to find out a remedy for the destruction of the parasites.

Recueil de Médecine Véterinaire. 4th Series. 7th vol.. Nos. 1 and 2. January and February, 1860.

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I.—On the Changes in Form, Aspect, and Size, of Different Parts of the Hoof considered as Causes of Lameness. By E. Weber, Veterinary Surgeon, Paris.

The object of this paper is chiefly to show the value of making incisions down the wall of the hoof at different parts, in order to ensure the less resistance of morbidly contracted regions, and enable the hoof to restore itself. The results of Weber's practice appear to us not to recommend his operation, inasmuch as more can be done with less injury by simple shoeing.

II.—Some Errors Committed in a Memoir on Veterinary Obstetrics. By E. Rochard.

This is a criticism on certain points referred to in an elaborate paper by M. Donnarieix. In the first place, the latter author says:—"When the foal is presented on its back, with the belly upwards, it is always dead." This, Rochard says, is not true, as proved by the following case:—On the 7th March, 1858, M. Patey, a farmer, called Rochard at 10 o'clock, P.M., to a mare that had suffered from colicky pains for several hours. The animal was suffering from labour pains,

and in the vulva two hoofs were found which at first were taken for those of the fore feet. They proved, on further examination, to be the hind, and though the foal was on its back, Rochard could not understand why it should not be expelled, when, on a further exploration, he ascertained that the umbilical cord was fixed between the hind legs, and prevented the foal being drawn out. By pushing back one of the limbs, it was got over the cord, and, with a little assistance, birth was given to a living animal, which Rochard had all along supposed, according to Donnairiex's views, to have been dead. A similar case is recorded by Rochard as occurring in the cow, but in this instance, the head of the calf presented itself, though the young animal was on its back, with the limbs upwards.

2ndly, Donnairiex said:- "When in a natural fore presentation, the hind parts cannot pass through the passage, from the hind limbs bending against the floor of the pelvis, the abdomen of the fœtus must be opened, and its viscera removed, in order to get at and straighten the posterior extremities." Rochard proves by a case that the straightening of the limbs is not difficult, but indeed easy, and in some cases the removal of the abdominal viscera is superfluous.

III.—Practical Remarks on Twisting of the Uterus in the Cow, and upon its Mode of Treatment. By M. Chambon, Veterinary Surgeon at Montargis.

Under this head, M. Chambon, after making a few cursory remarks on the anatomy of the pregnant uterus in the cow, enters very fully into the causes, symptoms, and treatment of this derangement of structure. During the latter period of gestation, the pregnant cornu of the uterus—generally the right—being greatly distended, stretches far into the cavity of the abdomen. In this condition, the broad ligaments of the uterus, attached as they are, only to the walls of the pelvic cavity, can retain the posterior part alone of that organ in a state approaching fixity. The great mass of the pregnant uterus thus being left to float free in the abdominal cavity, is capable of undergoing marked alterations in position; so much is this the case, that it may be turned completely round, inducing a perfect involution of the parts by which it is supported. In this condition, the broad ligaments are twisted round, and firmly compass the body and neck of the uterus, while the vagina, connected as it is to the walls of the pelvis only by loose areolar and adipose tissue, often participates in the twisting, and is in some cases its exclusive seat.

The involution may exist in different degrees. Thus the organ may have made a quarter rotation,—a condition by no means uncommon; it may have made a half, the superior part of the uterus, in this case, becoming related to the inferior walls of the abdomen,—an occurrence somewhat more rare. While a complete twisting in which the uterus has made a full rotation on its axis is a very uncommon occurrence.

Causes.—The condition occurs in all cases in the last stage of gestation, and almost always during the progress of the labour pains. It may occur at this time from falls, and especially from the hind-feet sliding from beneath the animal, so that she falls upon her side, or when she rolls down an inclined plane. The drinking of large quantities of cold water is supposed to lead to it, from its causing disorderly motions of the fœtus, and the habit some cows have of turning themselves from one side to the other without rising, has likewise been accused. Blows upon the belly, and especially in old or debilitated cows, forced exertions as when chased by a dog, are each blamed for inducing the mischief. In young and vigorous cows a very prolific cause is their very sudden and jerking motion during the progress of labour pains, the enlarged right cornu in such cases coming into contact with the distended rumen, during the violent movements, is liable to undergo a semi-rotation to the right, especially in those cases in which other agencies concur in producing this movement.

Symptoms.—No external symptoms can, according to M. Chambon, be relied on, as indicating this condition. There are the general symptoms indicating the ap-

proach of labour, without any external presentation. It has been said that the superior commissure of the vulva is strongly retracted into the pelvis, but this symptom may often be observed in cows not presenting this condition, but in which the belly is naturally very dependent. It has been further said that the calf lies more to the left side, but this appearance is often seen in other cases, and cannot be considered as diagnostic of this condition.

The alantoid fluids may have escaped before the occurrence of the twisting; if this is not the case, they are either completely retained, or escape in very small amount.

If nothing is done for the relief of the animal, the labour pains and the expulsive efforts continue for twenty-four hours, after which the pain disappears, prostration ensues, the appetite is lost, the secretion of milk suspended, the udder seems emaciated, the vulva loses its fulness, and the belly becomes voluminous. The cow remains constantly in the recumbent position, and on the eighth or tenth day, dies from exhaustion.

M. Chambon has in no case observed mummification of the fœtus when retained in the uterus by this means, and questions its occurrence, although supposed cases of this sort have been recorded by Rainard.

The certain diagnosis of the derangement is only to be obtained by exploration of the vagina and neck of the uterus by the hand. In some cases the modification in the form of the canal of the vagina will indicate the presence of uterine twisting, though, in most cases, such indications are only met with at the neck of the uterus. When the rotation is slight—say a quarter or third—the neck of the organ commonly affords easy passage for the hand, the progress of which is, however, soon partially arrested by a membranous fold upon the lower part of the canal, the right or left oblique direction of which indicates the side to which the uterus is turned. In such cases, the legs of the fœtus may be brought into the canal, but so long as the twisting remains, the head cannot by any means be brought forward.

When the uterus has undergone semi-rotation, the opening is completely closed, there exists, in this case, a great number of membraneous folds, the superior ones crossing the inferior in the form of the letter X. When the rotation has taken place from left to right, the superior folds proceed in the same direction, while the inferior go from right to left. When the twisting is in an opposite direction, so are the superior and inferior folds respectively. In this state of things there is often considerable difficulty in passing the hand into the uterus; its passage may, however, be much facilitated by placing the animal on its back on an inclined plane, with the head or anterior parts raised, while the posterior parts rest on the declivity. By this means it is evident the tension of the parts must be much reduced.

When a full rotation has taken place, the vagina is the seat of multitudinous folds, arranged spirally, but so complex that it is often impossible to obtain an exact idea of their disposition. The hand is introduced with much difficulty, even after the adoption of the means above-mentioned, to induce relaxation of the part, and once introduced, it is soon semi-paralyzed by the vigorous manner in which it is embraced by the parts.

In cases in which it cannot be ascertained from the folds what the direction of the rotation is, this may be ascertained by introducing the hand into the uterus, and turning the cow; when turned in a direction opposite to the twisting, the tension on the arm is increased, while, if turned in a similar direction, a slight relaxation is observable.

Prognosis.—This is somewhat variable, according to the duration and extent of the twisting, though by no means so unfavourable as may be imagined. The principal results to be feared are, 1st, death of the fœtus; 2nd, the occurrence of metritis; and 3rd, the death of the cow.

When the uterus has only undergone quarter rotation, the life of the calf may be saved twelve hours after the accident, provided the waters have not been evacuated; if this latter result has taken place, speedy death follows. The life of the cow is not, however, endangered, even though this state has continued two

or three days. More or less intense metritis may occur, but in the majority of instances, the cow at once resumes her ordinary health. When semi-rotation has taken place, and more especially when the rotation is complete, the calf rarely survives five or six hours, and in this case the occurrence of metritis is much more to be feared.

Treatment.—This consists in the introduction of the hand into the uterus, to prevent, as far as possible, change of position in the fœtus, while the cow is being turned by assistants in a similar direction to that in which the rotation of the organ has taken place. The animal is cast in a roomy and well-littered space, and the milk completely drawn off, to prevent, as much as possible, injury to the mammæ. The hand is now introduced into the vagina, and, if possible, one of the members of the fœtus is seized by it in order the better to prevent a motion of the uterus corresponding to the rotary motions of the cow. In cases when a member cannot be got at, gentle pressure is exerted upon the walls of the uterus. The assistants are now directed to turn the cow according to indications: thus, when the twisting is from left to right, the animal being placed on her left side, is first raised upon her back, and then brought over to her right side; she is then turned upon her belly, once more to the right side, and the same process again gone through. The time most favourable for retroversion is when the animal is upon its back and passing to its right side. During this movement the operator not only resists, advantageously, but also exercises a rotatory motion on the uterine mass, of a nature antagonistic to the direction of the twisting, one or two turns in general suffice to reduce a semi-rotation, while from three to four, prove effectual when a full rotation has taken place.

In all cases the operation should be proceeded with without delay, as, if the calf still lives, its life may thus be saved; while if it is already dead, the injurious effects consequent on its putrefaction will be obviated.

M. Chambon opposes the use of belladonna or other agent calculated to induce relaxation of involuntary muscular fibre, and prefers the use of the arm to any instrument introduced into the womb, as being more capable of feeling any increased tension or relaxation consequent on the turning of the cow, and being thus more able to adopt the means calculated to lead to a beneficial result.

The most difficult cases to manage are those of some standing, and those in which the uterine fluids have escaped before the occurrence of the lesion, and in which the uterine parietes are closely contracted over the fœtus. The extraction is in such cases most laborious, and the system of the cow is left in a low and vitiated condition.

IV.—Some Remarks upon Congestion and Apoplexy of the Liver in the Horse. By M. Camille Leblanc, Veterinary Surgeon at Paris

Under this head, M. Leblanc records nine cases of congestion, apoplexy, or rupture of the liver, complicated in certain instances with other disorders, as pleurisy, peritonitis, and pulmonary apoplexy, which, in a great measure, secluded the symptoms of the primary disease.

The conclusions to which he comes are the following:—

1st. The hepatic affections in the horse, of which the chief are congestion, apoplexy, and rupture, are less rare than published observations would lead us to believe.

2ndly. Congestion may exist alone, or it may be followed by apoplexy and rupture. The congestive and apoplectic conditions are often complicated with affections of adjoining viscera, and especially of the lung and intestine; sometimes with amaurosis.

3rdly. When the above-named complications exist, their symptoms, which are more familiar to veterinarians, may obscure or disguise those which distinguish the maladies of the liver.

4thly. The predisposing causes of congestion and apoplexy of the lion are plethora, obesity, and inactivity, occurring in pampered horses. M. Leblanc does not believe, with some English authors, that there is any previously exist-

ing disease of the lion. Occasional causes are blows or falls on the right side.

5thly. The symptoms are chiefly referable to the circulation; the pulse is suddenly reduced, becoming rapid and feeble; the prostration is extreme and well marked, especially in animals of a livily temperament; the movements are vacillating, the mucous membranes pale, and the ears and extremities cold. To these first symptoms succeed a yellow colour of the skin and mucous membranes, obstinate constipation, and a marked and rapid emaciation. These symptoms are common also to congestion and apoplexy of the lungs; but in that case, the greater acceleration of the respiration, and the marked diminution of the respiratory murmur appreciable on auscultation, are sufficiently diagnostic to prevent any confounding of the two disorders. From the intestinal congestions they are distinguished by the absence of the violent colic which characterises sanguineous effusion into the small intestine, and of the dull continued pain by which a similar affection of the large intestine is indicated. In the first stages it may be confounded with apoplexy of the spleen, though when the yellow tinge has appeared on the skin and mucous membranes, this can no longer be the case.

6thly. Two species of congestion ought to be recognised; acute and slight congestions.

7thly. The prognosis is always very grave in hepatic congestions: the malady, however, is not always mortal, as in examining animals dying from other causes, lesions have been found indicative of antecedent apoplexy, which had of necessity undergone the process of cure in such cases.

8thly. The only rational treatment consisting in bleeding at the onset of the disease, provided the state of the pulse will admit of this measure being adopted. Recourse should also be had to external measures, as frictions with hot vinegar or ammoniacal liniment, or sinapisms may be applied to the abdomen. Cathartics and emollient injections are likewise beneficial. At the outset of the disease, drastic purgatives and the balsams ought to be prescribed, aloes only being employed when there is obstinate constipation.

9thly. Hygienic and dietetic measures should be attended to with great assiduity. The animal should be protected from cold, but allowed a certain amount of liberty; his diet should at the same time be restricted, and especially must a considerable time be allowed to elapse before he is again put to work, as otherwise a fatal return of the disorder may result.

MISCELLANEA.

Distemper amongst Horses.—Partly owing to the long-continued disastrously damp weather, and partly to atmospheric causes, over which man has no control, an epizootic angina, or sore throat, with complications of inflammation in the bronchial tubes and pleural sacs, is, and has been, for some weeks past, prevailing to a very great extent in this neighbourhood. Where the animals are insufficiently attended to, in ill ventilated stables and improperly treated, the loss, we regret to hear, is heavy, but where proper hygienic conditions are studied, and cessation from work and good nursing enforced, the more serious complications are warded off, and the heavy fatality in a great measure diminished.—*From the Morpeth Herald, Dec.* 22, 1860. [The same disease, as above referred to, has prevailed to a very great extent in Edinburgh and its vicinity, but when properly treated, without any fatal result.—Ed. *E. V. R.*]

PUBLICATIONS RECEIVED.

Foreign and British Journals in exchange.
The Horse and his Rider. By Sir Francis B. Head.

EDINBURGH VETERINARY REVIEW

AND

Annals of Comparative Pathology.

ORIGINAL COMMUNICATIONS AND CASES.

Vial de St Bel and the Early History of the London Veterinary College : being a Letter written from Switzerland in 1798. From the MSS. of the late Mr Bracy Clark, F.L.S., Member of the French Institute.

The Odiham Agricultural Society met in London to receive the papers of Mr St Bel[1] on the glanders, and the question of establishing an institution for the more general study of the diseases of cattle being agitated, the subject of the glanders was forgot, and never afterwards resumed. The higher aim of constructing a college occupied from this time the attention of the more active members of this society, who, shortly after, in conjunction with some others to whom they had mentioned the subject, met together at the Crown and Anchor Tavern, and entitled themselves the Committee of the Veterinary College.

The names of Mr Stone and Mr Baynes deserve to be particularly recorded, as having taken a very active interest in the infant state of the institution; and as Mr B. once informed me, they often met together alone at the Crown and Anchor, and transacted the necessary business of the college, which the public naturally supposed was performed by a much larger committee.

An anecdote, which happened about this period, occurs to me of Mr St Bel, which, as it illustrates a strong trait in his character, I cannot forbear mentioning. To a good heart and a very generous way of thinking, he united a wonderful share of vanity, and not long after his arrival in London, when he had conceived some idea of success in the establishment of a new college, and his prospects began to enlarge, he could no longer be contented with the more humble apartments which had hitherto served his purposes, but chose his residence in the house which had been the earthly residence of the immortal Newton. The house itself was not remarkably large or splendid, but was certainly beyond what could comfortably come within the ex-

[1] It is worthy of notice here that the name St Bel, which our first professor assumed, is that of the place of his birth, a small village near Lyons. His real name was Vial, and this he bore in France.—Ed. *E. V. R.*

penditure of Mr St Bel, and no doubt the fame of its great inhabitant stamped on it a value and expense beyond its appearance. Here he lived, as he himself informed me, till his circumstances became so embarrassed, that he came to a determination of quitting the kingdom in despair of accomplishing his object; however, the accidental arrival of the Earl of Grosvenor and Mr Penn prevented him from executing his proposed departure almost at the moment of his executing it. These gentlemen had seen St Bel in France, and, acquainted with his merits, were among his best friends and supporters, and to the exertions of these gentlemen the existence of the present college may be owing.

Another circumstance happened about this time which tended greatly to favour the views of St Bel, and to bring him acquainted with some of the most distinguished gentlemen of the turf. The celebrated race-horse "Eclipse" was taken ill at Canons near Edgeware, and suddenly died. St Bel was sent for to open the carcase and examine the cause of his death, which he performed before a considerable crowd of connoisseurs, and executed it in a way that gave much satisfaction. He next proceeded to take the exact measurements of all the various parts of this wonderful animal, which any way related to his speed, and pointed out the difference which existed between the proportions of these parts in "Eclipse," and the medium standard laid down by the Freneh veterinarians for a perfect horse, or one which possesses all the properties of the horse to a certain extent, without any one property having the pre-eminence. From this general model he deduced his speed. His observations on this subject were highly ingenious, and were soon after published with the necessary plates and illustrations, and obtained for their author considerable repute, and served to make his name very publicly known.

The small committee which at this time conducted the business of the rising institution spared no exertions to accomplish their object. The newspapers of London contained a regular account of their meetings and of the business transacted, and several very able, ingenious papers were published about this time in the *Gentlemen's Magazine*, to interest the public in behalf of the new establishment; for this acceptable service I have since discovered the college are indebted to Grenville Penn, Esq., who also took a considerable interest in correcting the works of St Bel, and rendering them more agreeable to the public taste.

A very highly respectable committee was now chosen for the college, of twelve persons, eminent for their rank or talents; among these were Sir Jos. Banks, and the late justly celebrated Dr Crawford and John Hunter. The Duke of Northumberland also having appeared interested in behalf of the science was requested to take the presidency of the new institution, which he graciously accepted, and has proved a very excellent and bountiful patron of the society.

A loan was next proposed to begin the building of a school, and the necessary stables and a forge for the shoeing of horses. To this loan

most of the members of committee were liberal contributors, some of L.100, others of L.200 sterling, and His Grace of Northumberland a much more considerable sum; many others also advanced money on this occasion to the loan, who were not members of the committee. A subscription being opened for annual members of two guineas each, the funds of the college in a short time amounted to several thousands, and, in this paroxysm of vigour, a very noble plan was laid down for the construction of the college upon a magnificent scale.

After various searches about London, for the purpose of discovering a proper situation, a spot was at length fixed upon, on the north side, near the church of St Pancras; its distance at this time was about three quarters of a mile from London, and separated from it by green fields of considerable extent, which are, however, now, for the most part covered with houses.

A piece of ground, consisting of about 25 acres, was secured for the use of the college by a long lease of the Earl of Camden, and the buildings were immediately begun on a very grand scale, much more so than has been found possible with the finances of the society to render complete.

Mr St Bel was examined by a medical committee as to his qualifications for the office of professor, and was generally approved. A house was taken near the proposed college, and he entered on his duties; and pupils arrived for instruction from various parts of the kingdom, and were principally lodged in the house of the professsor.

The proposed plan of the buildings may be thus designed: A square, which on account of the disposition of the ground was obliged to be somewhat oblong, describes the line of the ground plan; three sides of this were intended to be occupied by stabling to contain 500 horses, with cattle, and forges for shoeing included. The remaining side or front towards the road leading to London was proposed to be occupied with a splendid house for the professor; and apartments for the officers of the college and the pupils, &c., in the centre of the line; at each end of this front, to serve as wings, were disposed the theatre for dissections and lectures, and the museum,—the theatre being the most necessary part was begun first, and is the only part finished on this superb scale; the wall of the stables, which serves to describe the outline of the plan, is also finished.

Besides this larger range, another set of stables was proposed on a smaller scale for the accommodation of horses which were ill of infectious distempers, for the sake of greater security, and that no apprehensions of danger might be entertained by timid persons who might make this an objection to sending their horses. These stables were also proposed for experiments of various kinds, to discover the effects on horses of the various articles of the Materia Medica, and, as these lesser stables were separated by a road, subterraneous communication was cut from one to the other with considerable difficulty and expense.

These last stables were begun and completed with all the dispatch possible in about the space of one year, and constitute the present stables of the college. An idea of the ground plan of these stables may be conceived as aptly represented by the letter E, whose basis or longer termination is made greater than the opposite side by the addition of an operating room and small forge.

The stables are lofty, about 14 feet in height, and with a neat ceiling, and well ventilated with valves at the top of the building; every standing for the horse is about 8 feet wide; the racks for the hay are of cast iron, and the mangers are covered with it, to prevent their ever suffering from those horses who are in the habit of gnawing them. Above the stables is the granary and hay lofts.

A forge also belonging to the smaller stables had been completed some months before, and horses in considerable number daily arrived to be shod, and afforded much satisfaction; indeed, in consequence of this measure, the mode of shoeing throughout London underwent a very sensible difference, and the injudicious plan of shoeing with heavy convex shoes, which was then almost general, is now almost entirely laid aside.

The lesser set of stables being at length ready for the reception of horses, were opened on the 1st of January, 1793, and in a few days every stall was occupied, amounting to between 50 and 60, and among them a variety of interesting cases, one of them which more particularly deserves to be recorded was a horse with six feet, two smaller ones growing out from the pastern (*paturon f.*) joints of the two fore legs. They were removed by Mr St Bel, and the horse did perfectly well; they were, however, connected by a proper capsular ligament.

The money of the society, which at this time appeared in plenty, was most lavishly expended in almost every possible way, and was shortly after succeeded by a great scarcity. In addition to this, the miseries of a war which absorbs from the people all lesser considerations, put an entire stop to the buildings, in which state they remain at present.

The anatomy of the horse was, however, this winter, pursued with uncommon ardour by the pupils, who were about ten in number. St Bel took a dislike on some account or other to three or four of them, who, in consequence of his representations to the committee, were dismissed the college for ever.

As money grew scarce from the enormous expenditure of the college, particularly in building, the affairs of the society began to decline, and a calm succeeded to the former noble exertions of the committee. Many subscribers were disposed to withdraw their names, some from having taken offence at the haughty demeanour of St Bel, whose disposition was particularly irascible and suspicious; other subscribers were induced to withdraw their attentions and subscriptions to the college from not experiencing the benefit and relief to their horses, which, from a too sanguine expectation of the

powers of the veterinarians, they had been led to look for, and which no practice, however skilful or judicious, could realise. These were attended with various reports of malicious people, very detrimental to the college, which at this period assumed a very forlorn and deserted appearance.

This was shortly after followed by an event which for a time seemed likely to terminate the misfortunes of the college and its existence; this was no less than the death of our professor, St Bel, which was very sincerely lamented by the friends of the institution, and by the pupils, by whom he was much beloved, and it was apprehended no one so well qualified could be found in the present dawn of the science to occupy his situation.

The death of St Bel took place about the summer of '95. His disorder was a low nervous fever, which at a very early stage gave indications of its fatal termination. He was attended during his illness by the celebrated Dr Crawford and Dr Scott, who were both particularly good friends to St Bel and the institution. At his death he left a widow in the most disconsolate situation, but fortunately without a family.

Previous to his death, his body and face were deformed by the appearance of abscesses, which nature had not strength sufficient to suppurate, and from the low nervous disorder changed to the putrid fever, in which state he died; and express directions were left by his physicians that no one should be suffered to approach the dead body, as it was conceived highly dangerous. However, strongly impelled by a wish to preserve to posterity the likeness of the man who, with so much anxiety and trouble, had first introduced the regular study of the veterinary science into our kingdom, I procured an artist from London to assist me, and together we took off an excellent impression in plaster of Paris from his face, which still remains in my possession, with many of the strong black hairs of his whiskers and eyebrows adhering to it.

There were few persons more intimate or had a better opportunity of observing him than myself, both in private and public life, and to such as may be interested in this narrative of the institution, the following short sketch of his character may not be unpleasant.

His figure was well-proportioned; of an open, manly countenance, and above the middle or standard size; his skin and complexion were a dark swarthy brown, with much dark black hair—the prevalent colour of the inhabitants of the south of France; his nostrils were particularly wide and swollen; his eyes a very dark, not clear, hazel. In his manners he was polite and easy, and often disposed to etiquette and punctilio, conceiving his situation as an officer of the public required it. In disposition he was highly jealous and irascible, and ever on the watch for an affront, which he would often imagine, where the smallest had not been intended; this trait served only to increase his enemies, and with them his susceptibility to this kind of foible. On the other hand, his disposition was bountiful and generous,

even to extravagance, to those he took an attachment to; when young he was gay, and perhaps profligate, however, during his residence at the college his conduct was conjugal and affectionate. He lectured on the anatomy of the horse, and illustrated the various structure and uses of the parts in an ingenious and happy manner; his knowledge of medicine was confined, and his prescriptions complicated and inelegant; he operated with considerable neatness in cases of surgery; his eye was acute in detecting beauties or faults in the external figure of the horse, and his lectures on this subject were often highly interesting, but his most shining qualification was said to have been the menage, of which I had no opportunity of judging.

Having traced Mr St Bel thus far, I will conclude this account of him, in justice to the college and the nation by following his remains to their last home. It may serve the useful purpose in these troubled times[1] of lessening party animosity, and of convincing those who have been deluded to think otherwise, that the generosity of the English in rewarding merit knows no distinction of nation or birth; the noble treatment and patronage he received during his lifetime might be urged as a sufficient proof of this, nor on his death were his remains treated at least with less delicacy than if he had been a native of Britain. His body being enclosed in a leaden coffin, and covered with a wooden shell, was deposited in the vaults of the German chapel of the Savoy; three mourning coaches attended his hearse on this melancholy occasion, filled with the pupils, the treasurer, secretary, and other members of the college, properly habited for the occasion. The service over the body was performed in the German language, and which, I believe, together with the place of his interment, was the choice of his lady, who was of this communion.

His loss was severely felt, especially by the pupils, who were none of them sufficiently advanced in years or experience to take upon them his situation, nor in looking round the country did there appear any one properly qualified for this office, and it was imagined by the friends as well as enemies of the institution that the college must fall to the ground.

On the death of St Bel, the care and management of the sick horses was entrusted to the senior pupils, and they acquitted themselves in a way that gave the public much satisfaction, and the internal regulations and care of the household was left to the care of our then very worthy secretary, Mr Mounsher.

In this state of the institution, the number of subscribers, which a year before had amounted to about 1100, suffered a very fatal diminution. It will be proper to observe that two guineas was the price of subscription per annum, or L.20, sterling, advanced at once, made a perpetual member, which entitled them to have for their horses what

[1] It must not be overlooked that the "troubled times" which Mr Clark refers to would probably, from the hatred manifested towards the French, have completely prevented the establishment of the College, had not Vial de St Bel arrived in England some years before.—Ed. *E. V. R.*

assistance the college could afford in advice, medicines, &c., and if the case required they should be detained in the stables, the subscriber only paid the usual price paid for horses in London at the livery stables.

The college had already contracted a very considerable debt upon the good reputation of its finances only, and the unfortunate creditors knew not in what way to obtain their money, as there was no ostensible debtor to fix upon; at length they grew somewhat clamorous, and threatened the members of the committee with a process of law to make them pay it, as being responsible for the acts committed in the name of the college. Had this been executed, it would have been a particular hardship, as the money many of them had advanced to the loan had never been returned, and which was lent on the most honourable basis for the use of the college, without any sort of security whatever, but in the hope that, if the college yielded the success it promised, it would in time very well afford to pay its debts. Death has, however, already in several instances, "cancelled the bonds," and the college will probably only get free from debt by outliving its creditors.

In this sort of inter-regnum the college remained for several months, and the probability of obtaining another and suitable professor seemed very doubtful; various gentlemen of acknowledged talents, who had made this branch of medicine their study, were applied to, who either modestly declined it from feeling themselves unequal to the lectures and demonstrations which the college required, or did not care to leave their own more lucrative establishments to pursue the very precarious fortune of the college, which certainly at this time did not hold out a very tempting prospect. And so far was this despondency carried, that it became a subject of consideration among some of the members of the college to what good purposes the buildings might be applied if purchased by any public society, to liquidate the debts of the college. The theatre, it was thought, would turn into a good methodist meeting-house, the area of the great stables into a useful burying-ground, and the lesser stables into a work-house for the poor,—but a better fate awaited them, and the tide of affairs shortly took a more favourable turn.

The pupils being left without a teacher, were unable to make any considerable progress in their studies, except what their own industry and observation led them to, or impelled by the generous emulation of excelling each other. While occupied in this way, a very unexpected and generous offer was made them by several of the most celebrated professors of human anatomy and medicine in London, which was to attend their lectures free of all expense; the lecture rooms and anatomical theatres of Dr Fordyce, Dr Baillie, Mr Hunter, and Mr Cruikshank, were now opened to them, and most of them with much ardour and industry availed themselves of this opportunity of acquiring an extensive information on medical and anatomical subjects, in which the early pupils of the college have been distinguished.

About this period several farriers and other presuming persons

offered their services to the college, but were rejected unanimously with proper indignation; at length the prospect of the immediate downfall of the institution, if some measures were not taken, induced several of the members again to meet at the Crown and Anchor. Indeed it was become almost a matter of necessity to uphold the institution, as otherwise the heavy debts of the college seemed likely to fall on the members who composed its committee, or at least engage them in disagreeable lawsuits. This, perhaps, gave a new spur to the exertions of some, while others were stimulated by more noble views, and had at heart the success of a rising institution, which promised in the end to render so many services to mankind, as well as on the score of mercy to prevent many unnecessary cruelties exercised without remorse by the ignorant on these patient useful creatures.

The Earl of Morton, in particular, again came forward to take an interest in the affairs of the society, as did also the Lord Heathfield. At length, after a variety of useless proposals to obtain a professor, two gentlemen of well-known accomplishments stept forward and offered the committee jointly to take upon them the professorship, and, having submitted, after the example of St Bel, to be examined by the medical committee as to their qualifications for the office, were universally approved.

Mr Moorcroft had attended the veterinary schools of France, and had already an extensive private establishment for the reception of diseased horses in London. Mr Coleman had also for some time practised surgery in London, and had paid considerable attention to the diseases of horses; these gentlemen being elected professors, brought to the college many new friends, and some old ones who had been displeased with the former mode of conducting the institution, and with the haughty behaviour of St Bel. The tide of affairs again returned in favour of the college, and with the exertions of the committee, which at this time was particularly numerous and respectable, and the skill and reputation of our new professors, the deserted college became again filled with horses. Mr M. proposed to take the surgical department, and Mr C. the medical department, in this way, to the great satisfaction of the subscribers, the business of the college was conducted during several weeks, when the sudden resignation of Mr Moorcroft gave another change to the chequered history of our institution. Mr M. found the attendance which the college required incompatible with the attention requisite to his own private establishment in Oxford Street. The resignation of Mr M., and his departure from the college, is a circumstance which ought ever to be deeply regretted by the ingenuous friends and lovers of this science.

The institution now remained solely to be conducted by Mr Coleman, from whose abilities and ingenuity[1] the science has everything to expect, he has been able during the three years that he has been professor, not only to maintain the institution in prosperity, but has

[1] Author of the Essay on *Suspended Respiration.*

had the address, with the aid of the committee, to procure the pecuniary assistance of Government, which now affords the institution a handsome annual supply, and places it beyond the probability of its ever being destroyed on this account.

The professor himself has also been distinguished by the command of the cavalry appointments of the army, with a handsome salary, and overlooking their medical department, so far as relates to the horses. A riding house has also been built in the area of the college for the better exercising the sick horses.

A considerable number of pupils who have received their education and diploma from the college have established themselves in various parts of the kingdom, and have experienced that support from a discerning public that will secure themselves a handsome emolument, and to the college the praise of being a beneficial institution; many have also been received in the army, where they supersede with considerable advantage the offices of the old farriers.

The medical committee, which examines the qualifications of the candidates for a diploma, is composed of the most respectable men of science in London, and are particularly selected from the most celebrated teachers of anatomy, surgery, and medicine. Several of the senior pupils passed this severe examination with much *éclât* the same winter of Mr Coleman's appointment to the professorship, and a great number of others have since received their diplomas to an amount with which I am unacquainted.

Floret; floreatque semper.

—Believe me, &c. OXONIENSIS.

Orbe, near Geneva, March 31, 1798.

Parturient Apoplexy; or, Dropping after Calving. By C. HUNTING, M.R.C.V.S., South Hetton Collieries.

THIS very fatal malady is not unfrequently confounded with one or two others of a much less fatal tendency, as palsy, and simple derangement of the system resulting from cold, rendering the animal incapable of rising, or of walking if placed upon her legs. The only analogous symptoms in the diseases enumerated, however, are inability to rise, partial or total loss of appetite and the secretion of milk, loss of rumination, increased action of both respiratory and circulating systems, and a tendency to constipation of bowels. As a rule, our diagnosis, and the history of the case, leads us at once to detect the true pathology of these different and distinct diseases, but occasionally we meet with a case of the latter occurring within three or four days after calving, which is very apt to mislead a careless or young practitioner. An interesting case of this kind came under our notice a few days since, which we think worth recording.

Mr Smith, of Seaham Grange, in this county, gave some twenty

guineas for a fine short-horn cow in Newcastle market, to calve in a few days. He brought her home by railway, and three days after reaching the farm, parturition took place; the cow did exceedingly well up to the fourth day, giving from 20 to 25 pints of milk, morning and evening. Early in the morning of the latter day, a messenger came to my house, requesting me to go to the Grange as quickly as possible, as the new cow had got "milk fever," had "dropped," and could not rise; he also stated that she was apparently in good health when seen at nine o'clock the night before, that she had given her full meal of milk, and had eaten all her provender. Not being able to attend for some three hours, I found, when I arrived, a butcher had been sent for to kill and dress her, the animal being in fair condition; and the owner, thinking her chance a bad one, wished her to be destroyed; the butcher, however, had not commenced operations when I reached the farm. As soon as I saw the position of the head and the countenance of the animal, I was almost sure I had not "parturient apoplexy" to deal with; and, after a careful diagnosis, was enabled to inform the owner that it was not the disease he supposed, and in all probability his animal would be well again in a few days; but, as the animal could make no use whatever of her legs, and had so suddenly lost her appetite, and the secretion of milk, I had some difficulty in making them believe that they were wrong. In this case there were many symptoms analogous to those of "parturient apoplexy," but the diagnostic symptoms of that disease were wanting, viz.,—partial or total coma; and the head, instead of lying round upon the shoulder, was held in an erect position; the udder was also flaccid; the animal perfectly conscious, and with a natural countenance. Without entering into particulars of the treatment of this case, I may merely state, that mild aperients, sulphate of potass water, diffusible stimulants, and vegetable tonics, with counter irritants along the spine, warm clothing, and good nursing, helped to bring my patient on her legs again on the fifth day after my first visit, and in ten days from the attack she was quite well, and giving her usual large supply of milk.

My object, however, in writing upon parturient apoplexy, is not so much to point out the differences between the symptoms of that disease, and of those which are sometimes mistaken for it, as to express my opinion of how the disease "milk fever" is most successfully treated. Before doing so, however, we would ask—What is the pathology of "Dropping after Calving?" and we would answer—congestion of the anterior portion of the spinal cord, consequent upon parturition. We, therefore, consider the term "parturient apoplexy" to be most expressive of the nature of the malady. So far as my own experience guides me, I do not think that any one breed of cattle is more predisposed to this affection than another; but, unquestionably, cows of any breed, when in high condition at the time of calving, are more frequently the subjects of this disease than the same class of animals when in poor condition, and these more in hot weather than

in cold. It is also certain that this malady not unfrequently assumes an epizootic, or rather, we should say, enzootic form, for, when I have had several cases following each other in one part of our district, I have inquired of other practitioners adjoining me, if they had not met with the same state of things, and the answer has, in nearly every case, been in the negative. They, on the other hand, have sometimes had several cases nearly together, when I had not seen a case for months.

It is also true, that the cow which has been the subject of parturient apoplexy once, is almost sure to be again affected at her next calving; it is, therefore, advisable to recommend the owner to feed the animal, but in some cases the farmer's wife prevails upon her husband not to feed or sell so good a milker, and the animal is accordingly kept for breeding again. A very fine cow, belonging to Mr Geo. Robinson, of Easington, had parturient apoplexy five times, the last attack producing inflammation of lungs, of which disease she died. This very valuable animal, Mrs Robinson informed me, used to give, for months after each calving, from 50 to 60 pints of milk per day, the butter from which averaged over 20 pounds per week. In each of her attacks, perfect coma came on shortly after "dropping," but in each case, until the last, she was freely bled, and cathartics and ammonia given before coma took place.

The first symptoms of the disease used to exhibit themselves about 24 hours after parturition, but one or two aperient drinks were given before calving, six to ten days, and another immediately after; cold water was also applied to the neck from the time of parturition, and bleeding, as soon as the first symptoms of the disease manifested themselves. By adopting these precautionary measures, this useful animal was carried through four different attacks of this malady, and, I believe, would also have got well after the fifth, had I been in time to bleed before the comatose state had taken place.

The next class of animals most predisposed to this disease are those which give an enormous quantity of milk, and by far the majority of the latter cases are those most difficult to combat, owing mostly, I believe, to the fact, that the professional man is seldom called to see the animal until it is down, and in a state of unconsciousness, when it is too late to bleed, an operation of far more importance in the early stage of the disease than any other part of our treatment. Our experience has proved to us, that if you can see the animal before she has lost the use of her limbs, or even if down, before coma takes place, and you can get something like six or eight quarts of blood from the jugulars or milk veins, and then treat the case as we shall afterwards explain, that fatal cases will not average over five per cent. Even if our experience had not proved this, the symptoms in the early stage of the malady, and the knowledge we possess of the pathology of the disease, would certainly dictate to us the importance of venesection, and that too from the jugulars. What is it, we would ask, that can relieve congested spino-cerebral vessels so

rapidly as withdrawing blood from the large veins of the neck, that is, when it will flow freely; but if, on opening the veins, I could only get a little thick, tar-like looking fluid to trickle down the neck, we should immediately close the openings, as, I believe, the pressure upon the veins necessary to abstract it from the system does more harm than the removal of such blood does good, but when it flows freely, the results are immensely different; and, in all cases where a rope is passed round the neck to get up the veins, our practice is to open both, as we consider, in a disease of this nature, to arrest the blood in a large vessel like the jugular of the cow, without giving vent to its contents, is likely to do considerable mischief, by adding to the already congested vessels of the brain or spinal cord. Having completed the bleeding, we next administer a full dose of cathartic medicine, combined with aromatics and diffusible stimulants, given in a large quantity of fluid; we then apply calico, four or five folds thick, saturated with cold water, the colder the better. Ice, if it could conveniently be obtained, would be better still, from the orbits over the poll as far backward as the fourth or fifth cervical vertebra; but whilst we have been providing for the application of cold to the neck and head, but more especially the neck, an assistant will have well rubbed into the skin, at the base of the neck and along the dorsal and lumber spines, a blister composed of either three or four ounces of ol. thereb., or strong acet. cantharides, with ℥i of ol. crotonis; having applied the wet cloths to the neck, they should have dashed into them two or three pints of cold water every ten or fifteen minutes, for as long as the comatose state lasts. After the application of the blister, the patient should be well covered over with blankets, which greatly facilitates the action of the skin, and, we consider, does much good. We have frequently seen cases where, in two or three hours, the patient has been in a profuse perspiration, which we regard as a favourable symptom. If the udder has not been drawn for some hours, it should now be attended to; if much engorged and hard, it should be well rubbed with the hand for a few minutes several times, whilst the person is drawing off the milk, and hot flannels kept constantly over it; if only half-a-pint of milk at a time can be obtained, we would always have it drawn carefully and well once in four or five hours. After the udder has been attended to, or whilst it is being drawn, we should make an examination per rectum, and ascertain the state of the bladder; if that organ is full, a catheter should be passed to empty its contents, which operation need not be repeated, except in rare cases, more than once in thirty hours; the fœces should also be removed, and injections of warm water given by the tube and bladder, or what is better still, the simple enema funnel which Mr Gamgee, senr., has introduced in this country, and which is recommended by Professor Gamgee, in his very useful work, "The Veterinarian's Vade-Mecum." If, however, the rectum is irritable, and constantly expels the fluid, we would not persist in their use, but should consider it an unfavourable symptom. During the whole of the comatose

state, and before coma sets in, if possible, we give sesqui carbonate of ammonia in ʒii doses every two or three hours, in a pint or two of gruel, and repeat the stimulants. Sulphuric æther, nitric æther, tr. zingib., and the aromatic spt. of ammonia, once in every eight hours, in not less than three or four quarts of warm water. We consider it of great importance to give the medicinal agents in large quantities of fluid; we think, also, that sulphate of potass in ℥ss. doses once in twenty-four hours, given in warm water, is of great benefit in assisting to overcome the strong tendency to constipation of the bowels. It is a disputed point with some practitioners, as to whether it is necessary to administer medicines with the probang tube during the state of unconsciousness. We hold it is of very great importance to do so. Notwithstanding the fact that you may give fluids to some cases during perfect coma without doing mischief, still there is a risk, which if possible to avoid, no professional man ought to incur. Three cases, within a few years, have come under our notice, where death has suddenly taken place following the administration of medicines without the tube to convey it down the superior part of the œsophagus, and in each case the autopsy developed the cause to be suffocation by the fluid choking up the bronchial tubes. We have so far spoken of an *ordinary case* of parturient apoplexy; we deemed it unnecessary to speak at length of the symptoms, because they are so well known, and the deviations so slight as not to warrant us in occupying space to note them; there are others, however, which we shall term complicated cases, where, after the comatose state has passed off, we get other important organs seriously diseased as the effects of the one of which we have been speaking, and which require prompt and active treatment, which we purpose speaking of in a future communication.

On Newspaper Prescriptions: Being a Letter to the Editor.

By R. H. Dyer, M.R.C.V.S., Waterford.

Sir,—Your remarks upon "Answers to Correspondents," contained in the *Review* for the present month, are so much in keeping with my own views of the matter, that I cannot refrain following up the subject so well chosen.

For many years past I have watched the growing of this *evil.* I do not know by what other term to express it better than "*growing evil.*" Many times I have taken a pen for the purpose of protesting against such practices, and as often laid it down in disgust.

A few weeks since you may have read a letter, in the *Irish Farmers' Gazette,* upon the cure of Sandcrack, by Homœopathy. The writer of the letter will doubtless practise his art in repairing tables and chairs soon. What cabinet manufacturers will do then, no one can yet tell.

Next follows a letter in the *Field,* with reference to using horses

without shoes; this is announced as a novelty. In the year 1844, I had an opportunity of riding in a phaeton which was drawn by a horse *un*shod. The vet., who was the owner, told me a long story about the matter: he could not succeed in prevailing upon *others* to follow his example; nor did *he* use any other animal without shoes. What will become of those whose business it is to make shoes for horses, deponent sayeth not.

The age in which we live is truly wonderful.

"*Answers to Correspondents*" frequently afford much amusement. I will give praise, and write *instruction* also. There are some things, however, often found contained in them which are objectionable, and apt to mislead those whom they are intended to benefit. These are in the shape of "advice" in diseases of horses, cattle, and sheep, etc. One is sometimes amused by reading, at first—Homœopathic treatment is recommended; should that fail, then Allopathy is adopted.

On referring to a work, by "Haycock," on Veterinary Homœopathy, I find, at page 248, under the head "Superpurgation"—"*Tincture of opium is also at times of great service in cases of this nature; it must be given in such doses as to at once allay the violent nervous irritation of the bowels.*"

So much for Mr Haycock.

Hear now what Dr Epps writes, in his work upon the Treatment of Wounds—Bleeding is the subject—"If he gets loose, let (the Doctor writes in page 46) him have some pure old wine when *he* desires it." Again, at page 138, "a little wine, a few drops."

At page 7 of "Tracts on Homœopathy," by William Sharpe, M.D., we are told, that "Homœopathy *is not* an infinitesimal dose." He says, "This is another popular mistake."

At page 15, Mr Sharpe writes—"Homœopathy *is gentle and agreeable.*" The remainder of the page is an amusing account of the hospital practice in Paris, under the charge of Baron Larey.

A pamphlet by Charles Ransford, M.D., at page 20, asserts—"I gave a lady, for a chronic affection, mercurius, nine globules, divided into three doses. Upon calling upon her a few days afterwards, she told me that salivation had ensued." This reminds me of what a lady once *told me*, during the time I was practising in the human profession. She said—"When I *see* 'calomel,' it *salivates me, and acts upon my bowels.*"

So much for imagination.

The all-absorbing topic in Ireland seems to be—The New Veterinary College in Dublin. It will be useless to send young men into the country, if they don't undertake to perform some wonderful cure, such as of Pleuro-pneumonia, etc. I am afraid many will meet with disappointment. The *people* require education in matters connected with Veterinary Medicine; and until they have this, I fancy they will not at once fall into the views of the promoters of education.

The "Eclipse" Controversy: Being a Letter to the Editor.

SIR,—When I wrote my note on the authenticity of the bones now in Edinburgh, attributed to "Eclipse," I had fully expected to have been enabled to make out a case in favour of the bones in Dublin having a strong claim to that honour; but I can find no evidence beyond the tradition noticed in my letter. That extends so far back, as to look as if there had been some reason, and good reason, too, for people so very generally adopting the notion, that the skeleton of the horse in the Royal Dublin Society was really of that animal.

I have hunted over the papers of the society for evidence bearing upon the integrity of the skeleton, and I have so far found none; I have also inquired of several old members of the society for exact evidence on the matter, but nothing fresh has been developed. I have also spoken to several gentlemen concerning the peculiar characteristics of the Dublin skeleton; and I am given to understand that the head and the other bones are not fellows, and the bones of the feet of the Dublin skeleton have no signs of disease. The bones generally do not conform to St Bel's measurements, if they were taken from the bones and not from the living horse, they appear to have belonged to a horse very inferior in size to "Eclipse."

Under these circumstances it looks clear that we can make but a bad case before the public, as claimants to the honour of possessing the relics of the famous horse; but this is not all, for if the statements contained in the accompanying extract be true, it may be, that the bones in Edinburgh are not the genuine ones either. Some evidence is required, it strikes me, to prove the inapplicability of these remarks to the bones lately purchased in London.

The following memorandum is from the *Annals of Sporting*,—No. 9, vol. 2: London, 1822, p. 199:—"The bones of this celebrated racer have been left at Bullock's Museum for exhibition, several months past, and are now withdrawn."

"Much as we revere the performances of this celebrated horse, greatly as we admire his progeny (now in the second and third generations), we could not commend the manner of showing his bones, simply as such without arrangement, in a box, and therefore withheld the present notice to avoid the appearance of invidiousness regarding a measure of which none could (as none did) approve. Bones that are all of a heap convey no useful lesson, besides reflections on the vanity of earthly distinctions, and these would properly belong to man (as Tom Paine or King Charles), rather than to those of any horse however distinguished in life. We sigh in vain for a sight of these bones, as of other celebrated horses, placed together as during their existence; or books with prints, stating their several proportions, whence the student, during his noviciate, may draw conclusions and come to deductions valuable in themselves, and capable of being made useful to all posterity. If we felt a little sour at the disappointment of some hopes we entertained of actually measuring the relics of

'Eclipse,' (dissatisfied as we are with the existing accounts), that sourness lasted not beyond Piccadilly, where they were shown (if any one went to the show), certainly not so far as the box in which we write, nor to the present day. No disposition exists in us to question the genuineness of the bones, but it is obviously most indecorous for the owner not to have proved that point. A tissueless recommendation, written in a left-handed manner, and inserted in an obscure publication (obscure as regards sporting matters), being all that the proprietor has condescended to give the public respecting his bones. This was a novel manner of a man selling his goods, and the price one hundred guineas, no one offered; so the country newspapers, one and all, passed a joke upon the affair by adding to it—nought, nothing, and 0, which transmuted the 100 into the 1000 guineas, thus beating the discovery of the philosopher's stone by chalks."

I have had no opportunity of referring to the newspapers of the date of this article, but you or your friends may, if they think the matter worth examination, hunt it up in London, where I should hope the necessary evidence is to be found.

It really is a matter of scientific interest to have the bones in Edinburgh properly verified, and the statements given above explained away, if it applies to them. I for one am under the impression that it does, for I have stumbled on a lecture delivered in London (?) on the proportions of "Eclipse," by W. Percival, Vet. Surgeon, 1st Life Guards, in the *Veterinarian*, under date of Sept. 1843 (vol. xvi. No. 189), which, with the following words:—"I confess I feel some surprise that no person since St Bel's time, none that I am aware of, has seriously taken up this subject,—the proportions of 'Eclipse.'"

From this it would appear that Mr Percival and his class were alike ignorant of the fact that a skeleton of even the bones of the famous horse were at that time in London; and if they were, it is not likely that their owner would have remained silent under the circumstances, and more particularly so if the bones were in the market, for one hundred guineas or pounds, the price at which they have lately changed owners.—Yours, &c.

M. R. D. S.

Jan. 16, 1861.

[When the foregoing letter reached us, we transmitted it to the relatives of Mr Bracy Clark, with a view to learn if the skeleton of Eclipse had ever been exhibited as stated above. We find that Mr Clark did most probably lend the skeleton, in the very case in which it has always been kept, to Mr Bulloch, with whom he was on terms of friendship. If our Irish friends, including Mr Fred. Taylor, will carefully regard the many facts brought out during the "Eclipse" controversy, they must come to the conclusion that the New Veterinary College possesses the bones of Eclipse. Mr Goodwin is amongst the most decided in tone with regard to the burial of the carcase of

Eclipse, but he does not declare in plain terms that the bones were buried. If he did, his declaration is of no more weight than that of any individual who may fancy he believes what history declares is or was not. No one can doubt that Vial de St Bel dissected and prepared the natural skeleton. This circumstance brought him into note, and led to the foundation of the Royal Veterinary College of London. Mr Bracy Clark, a member of the Society of Friends, and who has always held the highest position as a gentleman and man of science, has stated, in plain and unmistakeable terms, how Mr O'Kelly gave the bones to Mr Bond, and how Mr Bond afterwards transferred them to Mr Clark, from whom the New Veterinary College purchased them. With regard to our Irish friends, Mr Hugh Ferguson has clearly shown that there is not an approach in form even to any common race-horse in the dimensions and shape of the bones in the Royal Dublin Society's Museum. But the following correspondence, which occurred as far back as 1840, is interesting, as bearing on several points of the controversy:—

Notes on Irish Natural History. By EDWARD NEWMAN. Van Voorst: London, 1840. Pp. 56, 57.

"In this museum (Dublin Society's, Kildare Street), is also one of the skeletons of the celebrated race-horse "Eclipse," and his galloping structure was carefully pointed out to me. My esteemed friend, Bracy Clark, possesses one of the best authenticated skeletons of this remarkable horse, and very obligingly exhibits it to all inquirers. I am never sceptical on such interesting points as these, and only recommend the possessors to avoid, if possible, the unlucky chance that befel a pair of Cromwell's skulls—two undeniably genuine ones being, as I have heard, offered for sale in one catalogue."

Note on the supposed Skeleton of Eclipse. By BRACY CLARK, Esq., 7 Taunton Place, Regent's Park:—

"My dear Friend, Edward Newman,—On perusing, the other day, thy very interesting and valuable work on Ireland and some of its botanical treasures, I was very much struck with the impudent assumption of some Irishman, in calling some horse-skeleton of his, the skeleton of the renowned Eclipse Horse!

"The facts are simply these: that that famous horse was the property of Dennis O'Kelly, Esq., who bought him of Wildman, who purchased him at the sale of the Duke of Cumberland, at his decease, for 75 guineas. He never went out of O'Kelly's hands, but died at Canons, his seat in Hertfordshire, and who presented his bones, a natural skeleton, with the ligaments holding them together, so that they could not be changed, to my friend, Edmund Bond, veterinary surgeon, Lower Brook Street, Grosvenor Square; and after my friend, Edmund Bond's death, his widow, who still survives, in consequence of my various assistance to her in disposing of the business for her, and collecting her debts, and some pecuniary compensation besides, presented me with the skeleton, which never was in any other hands than the above-described. I was therefore much astonished at seeing such an unqualified assumption as the above, which some might call *a mistake*, but we in England should give another name to it.—I am, &c. "BRACY CLARK."

Those who dispute Mr Clark's word, are not likely to be convinced by any arguments which we may advance, and which is really useless as the matter at present stands.—Ed. *E. V. R.*]

Ascites. By William Mackie, Student in the New Veterinary College, Edinburgh.

I was requested by Mr William Cumming, Ballyvattan, Strathspey, to visit a horse 27 years old, which had been 22 years in the owner's possession, and had been very healthy during that time; but, in the spring of 1860, in consequence of the lateness of the season, he had been rather hard-worked, and although always appearing in good condition, he seemed to be more depressed in spirits than usual. After the working season was over, he was turned out to grass, where the farmer thought he was getting very fat, although still remaining dull in spirits. Nothing was suspected wrong, until it was observed that he never lay in the stable or at grass. After closer observations, they found that the urine was more scanty and higher-coloured than usual; but before I saw him, it had become almost clear, although still scanty. The next symptoms they observed were laboured breathing, the expirations terminating with a slight whistle at first, which gradually increased. I was then called, and found the following symptoms:—oppressed breathing; expirations terminating with a whistle that could be heard at several yards distance; frequent thready pulse; great dullness and prostration; standing with his legs apart; enormous distention of the abdomen, rendering the animal very unsightly; sheath and scrotum were also distended, and he appeared to be also slightly constipated. I at once formed an opinion that the case was one of ascites, and conceived there was no hope of recovery unless the fluid was removed from the abdomen. I then proceeded with the usual operation of tapping, but when about one half of the fluid was removed, the animal seemed to sink under the operation, which caused me to desist for about half an hour. Meanwhile administering ℥ss of tincture of opium diluted with water, at the sametime bandaging the abdomen so as to support its parietes. I then allowed the rest of the fluid to come away. The aggregate weight of the whole removed was about 360 lbs.; it was of a red, bloody appearance, rather heavier than water. After the operation was over, some grass being placed before the animal, he immediately commenced to eat. I ordered the owner to give him but a limited quantity of grass for some time, and then changed to dry food, such as hay or straw, with plenty of oats, with boiled barley or bran mash at night, containing half an ounce of nitre, and also ordered half an ounce of alum, and two drachms of sulphate of iron to be given once a-day, and steady pressure to be kept up by the bandages upon the abdomen. I had the pleasure of hearing that the animal had gone to work in about 14 days after; but, as I antici-

pated, he had a relapse soon after, and was destroyed, the owner not wishing to put himself to further expense. This case seems to be somewhat peculiar, from the enormous quantity of fluid removed at one tapping, and the animal nevertheless surviving the shock of the operation. I believe it resulted from general debility and relaxation of the circulatory system. There is a case recorded in the *Veterinarian* for 1849, p. 653, which came under the observation of Messrs Chalmers, V.S., Tawes and Cumming, V.S., Ellon, where an abdominal tumour, with dropsical fluid, was removed, amounting to 300 lbs., from a mare, the property of Mr Skinner, Aquheedly.

Soundness in Horses: Being a Lecture, delivered in the New Veterinary College during the Winter Session, 1859–60. By JOHN GAMGEE, Principal of the New Veterinary College, Edinburgh.

GENTLEMEN,—Few men have ever owned a horse, or even contemplated becoming the owners of one, without being puzzled by the question —WHAT IS A SOUND HORSE? WHAT CONSTITUTES AN UNSOUND ONE? No man, whether amateur or trader, has ever had much to do with horses, without repeatedly encountering difficulties in attempting to answer those questions to the satisfaction of his judgment and of his sense of fairness. My present object is to say something in reply to these questions, and on the matter of horse-warranty generally; but I wish distinctly to be understood as not aiming at exhausting the whole subject—at clearing it of *all* its difficulties—I shall be satisfied if I succeed in doing a little towards instructing those desirous of learning, and baffling those intent on cheating.

The subject is one which cannot be treated in a single lecture, and requires to be studied with every opportunity for the acquirement of that which I may be allowed to term "General Horse Knowledge," possessed in an eminent degree by many of our countrymen, though employed too often for unworthy purposes. It is, I repeat, rather with the object of placing additional obstacles in the way of the dishonest, and opening the eyes of the confiding and less experienced, to enlighten those who have a very confused notion as to the value and purport of a veterinary surgeon's certificate, that I this day meet you to discuss the subject of the warranty of horses.

It is in his conduct toward the many persons—often widely different from each other—interested in a professional opinion regarding a horse's soundness, that the veterinary surgeon has occasion to prove himself an able man—an honest man—and a gentleman. It is not sufficient in this very difficult branch of our profession to start with great self-reliance, and full of good intentions. Caution and strength of right purpose are essential qualities; there is nothing more dangerous than the prevailing tendency amongst veterinarians to consider themselves never liable to err, and proof against prejudice, when called upon to settle, in case of dispute, whether a horse be

sound or not. The veterinarian, as well as the purchaser of a horse, must bear in mind the maxim, "*Caveat emptor.*"

A degree of carelessness, a tendency to listen to the person who first consults, a desire to stretch a point in favour of a friend, are too often attended with most serious results—results at once destructive and demoralizing.

I have been repeatedly annoyed by noticing the low estimate of professional integrity attributed to veterinarians by many horsemen. It is not unusual, to obtain promises of good support, to hear a man whisper in one's ears, "I hope you're going to be fair in this case," and even to be threatened with all that an angry man can think of, if your opinion be against him.

Veterinary surgeons themselves have brought this about. I find it no uncommon thing to be called upon to examine a horse declared *sound* by a veterinary surgeon, which, on my declaring him to be unsound, is said to be "*only a little bit rough of 'is 'ocks,*" or "*just a little stiff at starting,*" and, "*wanting a bit of the spur,*" or "quite sound enough to do the work he will be required for if purchased," and I may be told that I had better not spoil the sale.

No one can calculate the injury done by the veterinary surgeon inclined to please, and to overlook defects. He must injure himself in the long run, but immediately, either purchaser or seller suffers; ultimately, all must be losers. Honesty is most unquestionably the best policy, and it is often found that the honest declaration of a defect and its probable consequences by a veterinary surgeon, leads to a fair deal which might otherwise have ended in a prolonged dispute.

It is proverbial that, in horse-dealing, tricks are being constantly played; dishonesty is daily practised. It is a mistake, however, to suppose that all the sharp practice is on one side. I have as high an opinion of the better class of horse-dealers, as of gentlemen who habitually buy and sell horses. I find that very frequently the veterinarian has it in his power to settle difficulties, which, by a partial opinion, he gives rise to.

"Lawsuits," it has been justly remarked, "originate less frequently in the positive dishonesty and bad faith of the litigants, than in their gross misconception of each other's rights and liabilities." As, since the days of Adam, men have been liable to err, so from the earliest date that transfer of commodities in consideration of price or recompense has been in practice, conventional rules must have been in vogue for the protection of the just against the unjust, of the deceived against the deceiver; and the history of the Law of Warranty must, in a sense, be as old as contracts of sale. There is no definite information, however, handed down by Greek or Roman, which would lead us to believe that any but the jurisconsult ever interfered in questions of veterinary jurisprudence; but the works of farriers were largly consulted after the revival of letters; and the counsels of this class of practical men tended greatly to modify the rules established by the Roman magistrates. Ercolani has shown that veterinary jurisprudence grew gradually, and that attention was specially paid to it as

far back as the 13th and 14th centuries. Certainly, however, if we look back to the laws of the ancient Romans, we shall find that, in Great Britain, at the present day, there is not much more provision than amongst the ancients for the protection of those who deal in animals. The law is almost as vague now as then, and justice is dealt in a great measure according to the wisdom of those who can determine whether an animal is or is not free from disease, defect, or vice, at the time of sale.

The Roman jurisprudents attempted to establish rules to prevent disputes amongst citizens, and so to direct their acts as to engender the habit of being just and honest in such transactions. It was enacted, that any one selling an animal was to inform the purchaser of those vices and infirmities which might interfere with the animal's usefulness. They did not allow the seller to exculpate himself in cases of difficulty, by saying that he ignored the vice or infirmity, as this would have led to great opportunity to deceive. And as they considered that such an inquiry was often difficult, in matters of doubt, they recommended great leniency towards the purchaser, who, paying a sound price, might find himself in possession of an unsound animal—not attributing great importance to determining whether the injustice done to the buyer resulted from the ignorance or cunning of the vendor, but by declaring that the latter should be bound to mention the vices and infirmities of animals he offered in sale. Those vices and infirmities were meant which interfered with the use for which the animal was sold, and so far affected the value of the latter, that, if expressly mentioned, would have interfered with its sale. Had the law granted further protection to the buyer, dealings in animals must have been rendered too uncertain.

If, therefore, the vendor had hidden some defect or infirmity, the vendee could claim a solution of the contract, receiving his money back and returning the animal; or he might propose a diminution in price proportionate to the defect or infirmity which had manifested itself. This was called an estimatory request, for the price was reduced according to the just valuation of such an animal if purchased with a full knowledge of the real condition of the animal. In either case, damages might be sought if any losses sustained from it proved fraud on the part of the vendor. The time was limited for seeking such indemnification. An animal might be returned within six months after the contract was entered upon, and the "estimatory reduction" claimed within a year from such time. These periods are longer than at first sight would appear, for the six or the twelve months were looked upon as consisting alone of the juridical days, that is to say, of those days when the judge acted in the distribution of justice; and if these terms were considered with reference to the time over which they extended, it would be found that they spread over more than double the actual time specified. But one condition was essential in all cases, viz., that the purchaser should prove the animal's failings to have existed before or at the time of sale, the vendor having nothing to do with that which should have been im-

possible for him to declare at the time the contract was entered upon, or even to predict. In addition to this, the purchaser had a right to insist that, for the contract to be valid, the animal should possess certain qualities or peculiar excellence for special purposes, which the vendor warranted. That, however, under this head, persons should not construe as actual conditions of sale the magniloquent encomiums which vendors so commonly resort to in their dealings. If the sale was made with the condition that, if the animal did not suit, the contract was not to hold binding; and if the horse had been sold harnessed, and the harness not delivered with him, then return was allowable within 60 days.

After the revival of letters, all the Italian states and petty republics had their special laws referring to dealings in animals. Instead of the vague Roman laws, it was the custom to set a limit to the number and kind of diseases, defects, or vices, which rendered a horse returnable. The ancient laws of the Celts, given at length in a work published in 1841, "On the Ancient Laws and Institutes of Wales," recognise certain vices or defects entitling purchasers to indemnity. Amongst them are blindness, fractures, rigidity, and glanders. The laws referring in general to agricultural matters are more numerous amongst the Germans than the Anglo-Saxons, those of the latter being excessively poor, even as compared with those of the ancient Celtic. The law was, amongst the Anglo-Saxons, that if an animal was bought, and within 30 days some malady discovered, for the contract to be proved valid, the vendor was to touch the animal with his hand, and swear that he was not aware of the infirmity existing at the time of sale. Ercolani compliments Englishmen on the manner in which, as honourable men, they thus placed confidence in each other, though of course, juridically speaking, the law could not possibly be more loose or vague. The laws of Rome and the laws of the Celts and Germans were not strictly the traditional laws of our forefathers, which were published in Italy under the assumed name of Aristotle; a copy of them is to be found in the famous Biblioteca Ricardiana of Florence, and many rules are detailed in this publication as guides to the purchasers of horses.

I shall not detain you longer with historical notices which I have brought before you, to show that the law respecting horses more especially, or respecting the sale and purchase of other animals, has been looked upon in different aspects. In the one case, it has been deemed right to protect the vendor by excluding from the list of diseases or defects for which an animal may be returned, a larger number considered either too obvious to the purchaser to admit that he could be misled, or too simple to interfere with the animal's usefulness. On the other hand, in Great Britain, as amongst the ancient Romans, legislators consider conditions of sale and warranty, and have no prescribed list, to use a French expression, of "reddibitory vices." For any disease, any defect, any vice, proved to be such, and existing at the time of sale, the purchaser may seek and obtain indemnity.

The common rules applying to sales in general, apply to the sale of horses. You can learn these by reference to the most elementary work on general jurisprudence. But as regards the law of warranty of horses, we find that "all latent faults are under the implied condition of soundness, while obvious faults only are excepted from it." Any express condition rules the question, whilst, as amongst the ancient Romans, general and vague assurances are not to be held as express agreements altering the implied engagements. Professor Bell, in his "Principles of the Law of Scotland," says that "Warranty of soundness seems to comprehend—1st, All constitutional diseases affecting the life of the horse; 2nd, All accidental injuries which affect the life; 3rd, All diseases and accidents attended with lameness, or rendering, or tending certainly to render the horse prematurely unfit for work; 4th, All defects or bad habits, indicative or symptomatic of disease—it being the disease, however, which in such case amounts to unsoundness; 5th, Opinions differ extremely as to slighter faults, whether they amount to unsoundness or temporary lameness."

Furthermore, Professor Bell says, "Those faults relative to temper, steadiness, timidity, use, &c., which, however important, are not unsoundness, must be guarded against by express warranty; and it is a question of evidence whether such engagement has been undertaken, and how far it has been complied with."

"A horse in which a defect has been discovered comprehended under the seller's engagement, must be returned immediately, or as soon as the fault is discovered; or, if there be a time limited within which the horse, if objected to, is to be returned, that makes the rule between the parties."

In England, gentlemen, warranty is not implied as it was for long in Scotland, but, express—the maxim, *caveat emptor*, is the rule of the law; and if a buyer mean to protect himself from every kind of unsoundness known or unknown to the seller, he must take a warranty, and he is not protected otherwise, unless he can make out a fraud. No particular words are necessary to constitute a warranty; it is sufficient if the vendor says that the article is of a particular quality, or is fit for a particular purpose. In Scotland, a sound price given for a horse protected the purchaser as much as if he had an express warranty. Questions might in some cases arise as to what should be considered a sound price. Some said that no horse can be held as warranted that has been paid under ten pounds; but of course this could not apply, as some ponies may and do sell at a price under ten pounds, when perfectly sound, and the law could not reach the seller of an unsound pony of this kind. This matter, therefore, had to be determined by the circumstances of each particular case. Recently, the law in Scotland has been construed by judges according to the principle obeyed in England.

A warranty may be general or special, limited as to time, or otherwise qualified as in the case of a person saying that, to the best of his belief, the horse he is selling is sound. If the converse be true,

and proof adduced that the vendor was aware of the unsoundness at the time of sale, an action may be maintained by the purchaser upon the qualified warranty.

Though we have already stated what Professor Bell declares "warranty of soundness" corresponds to, it is important to consider what is meant by a sound horse. The most satisfactory definition is, that soundness implies the "perfectly healthy state,"—the act of detecting unsoundness being essentially the act of diagnosing disease.

This definition of *soundness* resolves itself into a definition of *health*, and the physiologist alone can fully appreciate what is meant by health. It is that condition of a living being in which the component parts—tissues or organs—separately and collectively, retain their natural or normal form and relations, and are capable of fulfilling the purposes, or performing the functions for which they were made. Baron Parke has justly said, "I think the word "sound" means what it expresses, namely, that the animal is *sound* and *free from disease* at the time he is warranted sound.

Purchasers of horses occasionally insist that, in determining whether a horse is sound, a veterinary surgeon is bound to consider any apparent predisposition to unsoundness; but it must be distinctly understood, that the veterinarian always examines a horse as to the actual state at the period of the examination, and though his opinion may be sought as to the predispositions of the animal, unless he detects disease, he cannot reject a horse as unsound. The opinion of a veterinary surgeon may be sought as to the soundness of a colt with badly shaped, though healthy limbs. The practitioner may feel assured that the animal will suffer from sprains or curbs as soon as submitted to hard work, but so long as the sprains and curbs are not in existence, the ill-shaped animal claims a certificate of soundness.

A purchaser of horses must rely on his own knowledge as to form; he must first make up his mind as to the kind of animal he requires, and, if he be not capable of choosing for himself, he must employ a person of experience in whom he can rely. It has been suggested that the veterinary surgeon should act as an agent or broker in the purchase of land, houses, or other property. This would render him far too much the horse-dealer; and, besides many other objections, it is incompatible with the duties of a veterinary surgeon.

As Oliphant states, in his valuable work on the "Law of Horses," the term "*natural usefulness*" must be borne in mind. "One horse may possess great speed, but is soon knocked up; another will work all day, but cannot be got beyond a snail's pace; one with a heavy forehead is liable to stumble, and is continually putting to hazard the neck of his rider; another, with an irritable constitution and a washy make, loses his appetite, and begins to scour if a little extra work be exacted from him. The term *unsoundness* cannot be applied to any of these; it would be opening far too widely a door to disputation and endless wrangling. The buyer can discern, or ought to know, whether the form of the horse is that which will render him likely to

suit his purpose, and he should try him sufficiently to ascertain his natural strength, endurance, and manner of going."

The very objectionable expression, "seeds of disease," has crept into discussions on the definition of unsoundness. It is simply another expression for "predispositions," of which the veterinarian can never take cognizance. Thus, if called upon to examine a horse, the produce of a mare with ossified lateral cartilages—popularly called "side bones," that horse could not be rejected, if, at the time of examination, he was quite free from the disease, even though it might be proved to have been communicated by the same mare to some of her produce. It is possible, and even probable, that the horse examined may eventually suffer from ossific degeneration of the lateral cartilages; but we have only to deal with that which *is*, and not with what *may* occur. The question of soundness is one of actual fact, and not of presumptive argument.

Acute disease is unquestionably unsoundness; but many important points may have to be settled by veterinary surgeons called upon to examine animals suffering from maladies of recent origin. Proof must be adduced that the acute disorder existed at the time of sale, in order to entitle a purchaser to dissolve the contract. This is too often overlooked, and very extraordinary opinions have repeatedly been given regarding the duration of disease, and the time required for the development of lesions met with after death, to prove that a horse must have been diseased at the time of sale. The decision of these cases calls for the most careful and unprejudiced inquiry into the history of the case, and the most accurate knowledge of disease, and of pathological anatomy, in particular.

Baron Parke, alluding to acute diseases, has stated, "An argument has been adduced from the slightness of the disease and the facility of cure; but if we once let in considerations of that kind, where are we to draw the line? A horse may have a cold which may be cured in a day; or a fever, which may be cured in a week or a month; and it would be difficult to say where to stop. Of course, if the disease be *slight*, the *unsoundness* is proportionably so, and so also ought to be the *damages;* and if they were very inconsiderable, the judge might still certify under the statute of Elizabeth, to deprive the plaintiff of costs."

Many acute disorders have given rise to disputes, and a few cases will best illustrate how they may affect contracts of sale, and what line of conduct the veterinary referee should adopt.

Thus, with reference to the period required for the development of abscesses in the internal organs, ulceration in joints, anchylosis, and bony tumours, mistakes are constantly made, and I have no hesitation in saying, that very often veterinary surgeons would do well to consult medical men having an extended knowledge of pathological anatomy, than trust to their vague notions as to the rapidity with which an important organ may not only undergo partial change, but complete destruction. A case in point came under my notice last summer. A

cart-horse was sold on the 27th of last May, in a public fair, having afforded the most marked evidence of health and vigour up to the moment he was transferred to his new master. On the 28th he was put to the plough, and worked well until the afternoon, when he appeared languid. The animal refused his food, and it is said that his urine was high-coloured. On the 29th, a veterinary surgeon was called to him, and found him suffering from a bad cold, with swelling of the submaxillary glands, which afterwards suppurated. Notwithstanding the attentions of the veterinary surgeons, the horse was seized with a severe attack of strangles, gradually sank, and died on the 19th of June. A *post mortem* examination was made, and abscesses were found "on the seat of the absorbent glands, from the opening of the chest along their course within that cavity, and a great many abscesses were found in the lungs and in the right kidney." This was a most beautiful—indeed, a typical case of purulent infection. Still, veterinary surgeons were found to support the view, that the horse must have had diseased kidneys prior to the 29th of May, because, on the 19th of June, abscesses were found within them.

The case was not an unusual one. Many instances of the development of metastatic abscesses in bad cases of strangles are on record, but the internal abscesses succeed, and so far as we yet know, never precede the suppuration in the submaxillary lymphatic glands. The lesions observed in the above cart-horse might develop within a week, and it is very remarkable to observe the rapid destruction of the lungs, liver, head, kidneys, spleen, and nervous system in cases of purulent or pyogenic fever, in cases in which pus may penetrate the blood-vessels, and in experiments by injecting minute quantities of pus into arteries and veins. Therefore, as metastatic abscesses may develop in periods varying from three to twenty days, unless there be distinct evidence of the horse having shown symptoms of deranged health prior to the sale, the purchaser cannot claim repetition of the price.

It is a very serious matter for the purchaser of a valuable horse to lose him so soon, but in all fairness, the man who sells a healthy horse can no more be responsible if the animal dies of colic or severe fever in the course of forty-eight hours after the sale, than he can be held liable to stand the risk of disease affecting the animal at any subsequent period.

It has been said that, under such circumstances, the purchaser loses recourse if he attempts to cure the horse.[1] I hold that this is unjust, if the purchaser informs the vendor of the fact, that, on the horse he had bought having been taken home, he was observed unwell. It is right to enable the seller to obtain evidence of the disease the animal is suffering from; and it has been declared by Lord Ellenborough, that the party who extinguishes the light, and precludes the other party from ascertaining the truth, ought to bear the loss.

It may be found that the acute disease, observed immediately or

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[1] Russel. January 9, 1792. B. 479.

shortly after the consignment of the horse, has arisen from some cause which has taken effect prior to the sale. In some cases this would enable the purchaser to claim full price and return the animal. A chesnut pony was brought to us to examine. At the trial he was severely worked, and made to trot far and fast. Being fat, and "made up for sale," the severe trial led to swelling of the back tendons, inflammation of the tendinous sheaths of the flexors of the fore extremities. The animal became very lame, the limbs were much swollen, and we suggested a reasonable time to be allowed to observe the effect of proper treatment. The injury inflicted proved to have been severe and irreparable, and the animal was returned. This case shows, that we must consider when a horse has been submitted to any influence calculated to induce disorder; and though he may at the moment of sale not have shown symptoms of disease, the vendor is responsible if, while the animal was his property, he has submitted him to any treatment calculated to induce defect or blemish after the sale.

The question could not be so easily decided in the following case, though the course which I pursued under the circumstances appears to me to be the right one. A cart horse was purchased with a warranty in Edinburgh, and two days after the sale, when put to work, he was observed lame in the near fore leg. He was sent to me to be examined, and I found that, since the time of purchase, he had only walked the distance of eight miles from town to the farm. On examining the foot, it was observed that the lameness arose from improper shoeing. Proper shoes were placed on the feet, the painful state of the latter was soon relieved, and the horse retained by the purchaser. There is no doubt that the shoes in which the horse was bought were the cause of the lameness, and the vendor might have been held responsible; but it would have been matter of regret if, perchance, by improper management, the horse had been rendered permanently lame, and had been made the subject of litigation. This often happens when a farrier removes the shoe, cuts away horn to ascertain if there has been any extravasation of blood constituting corn, and if improper shoes are again applied. In such a case, it would almost appear that the rule might be beneficially applied, of holding the purchaser responsible for having caused the animal to be injured.

Corns render animals temporarily unsound, and a horse may be returned with bad corns, though in this case the defect depends so much on the farrier, that it is difficult to decide the question without doing some injustice to the vendor. Many sound animals receive bruises from improper shoeing, and such bruises which constitute corns may occur, unless the foot is allowed to grow sufficiently to obtain level surface for the shoe on the wall of the hoof, and relieve the parts where concussion has led to mischief. In all such cases, a veterinary surgeon must be guarded not to encourage litigation, should he be asked whether the horse is to be returned or not.

Not unfrequently a horse is purchased with a cough, and it is the veterinary surgeon's duty to determine if it depends on acute or chronic disease of the respiratory organs. An acute cough may often be followed by permanent disease of the larynx, inducing whistling and roaring, and I think that sufficient care is often not taken in deciding the duration of the malady. If a horse, at the time of purchase, has a cough, and proves afterwards to be a roarer, the seller is clearly responsible; but often the cough is induced by the changes in diet or stable, and the severe trials to which an animal is submitted at the time of sale, or is developed from the animal being placed by the purchaser in hot, ill-ventilated stables. Within three weeks after purchase, a horse may be a severe whistler and roarer, and it would be unfair to make the seller suffer for such an accident, if he could adduce evidence that the diseased condition had resulted from mismanagement on the part of the purchaser.

Still, referring to questions which may arise as to unsoundness from acute disease, I have to mention a class of peculiar cases, not very often the cause of litigation in Britain, though frequently giving rise to dispute on the Continent. This class of cases includes intermittent diseases, and, first in the list, periodic ophthalmia, then epilepsy or megrims, intermittent lameness, and lastly, intermittent inguinal herniæ. In all cases it is incumbent on the purchaser to ascertain, by all means in his power, the history of each case, the seller not being responsible if the animal sold has not shown symptoms of disease prior to the sale. Traces of the disease may be noticed by a veterinary surgeon examining a horse that has been affected. Thus, in periodic ophthalmia, the shape of the eye, or a slight cataract, may settle the point. In cases of epilepsy or megrims, the nature of the case must be thoroughly investigated, and if the nervous symptom is due to organic disease of the brain, the animal should always be returned, if it can be made out that the symptoms of the malady were observed prior to the time of sale. The purchaser is entitled to the same protection with regard to megrims, though he may find that attendance to the shape of the collar, so that the latter may not press on the bones of the neck, will entirely prevent the disease. The French class intermittent inguinal herniæ amongst the defects for which an animal may be returned. They make use of so many entire horses, that it is important purchasers should be protected from this dangerous, though certainly rare condition.

Is a *habit* unsoundness? Very frequently it is not; at other times it remains with the veterinary surgeon to determine how far disease has been induced by a habit, or to what extent the habit depends on disease. The bad habit of shying, which often depends on natural timidity, is occasionally caused by imperfect vision. This may be due to the shape of the eye, or to disease of this organ. In the latter case, a horse is decidedly unsound; in the former he is not; and probably a purchaser could not recover damages, if, in buying a horse that afterwards proved addicted to shying, he had not provided himself with a

qualified warrandice, in which it was provided that the horse was "quiet to ride," or "free from vice."[1] Crib-biting, which has not been considered unsoundness within a general warranty, is, in my opinion, certainly unsoundness, if we observe an animal become subject to distension of the abdomen, and symptoms of severe illness, unless he be prevented from grasping a solid object, or unless a strap be tightly bound round his throat. Such means employed for the prevention of a vice and its attendant ill consequences, must clearly be regarded in the light of remedies for an unhealthy condition—hence, of evidences of unsoundness.

REVIEWS.

The Horse and His Rider. By Sir Francis B. Head, Bart. London: John Murray. 1860.

The delightful work thus entitled is somewhat marred by the illustrations. They are few, useless, and three out of four decidedly bad. We should not notice them, but that we must express a regret that a book so well printed should be spoiled, for the sake of satisfying the fancy of the public with a frontispiece and vignettes. May they be better when the work attains its second edition, which it deserves to do, in as short a time as the enterprising publisher can clear the copies from Albemarle Street.

Sir Francis possesses three qualities, which eminently fit him for the task he has imposed on himself: he loves the horse, he loves the rider, and he loves writing. This we glean from reading his book, which could only have been written in its unaffected style by one such as we hold Sir Francis Head must be.

That a horse is a noble animal, is stated and proved in the first fifteen pages, in which skips are made from palaeontology to biblical quotations, from ancient history to the present day, in a manner suited to the general reader. Mr Rarey is much honoured, by claiming attention next. We think Sir Francis is a little carried away in the manner we have been, with many more. That clear-headed, and most learned of veterinarians, so recently dead—Bracy Clark—alludes to this subject, in a manner worthy of the attention of all horsemen. He says—

"We hail with pleasure anything coming from this new-born land of America, unencumbered as it is with the tumours, incrustations, and impediments usually thrown in the way of advancing knowledge by old governments and laws. However, it is not to be expected that all will be good that proceeds thence, without some degree of pruning and setting to rights, as being too wild for immediate

[1] Broennenburg *v.* Haycock, Holt's N.P.O. 630.

adoption. How earnestly we wish the noble example of the founder of Pennsylvania may be kept always in view by this people, who nobly refused to receive the gift of the land of Pennsylvania, though given him for a debt, till he had satisfied the natives of the land by a solemn treaty and purchase.

"The present performance of Rarey is brought before the public by one enamoured of his system, if such it may be called, by a fox-hunting squire, a writer on horse subjects for the newspapers—a school not very much entertained by the public for this species of investigation. In the first place, we must seriously object to the very title, which is rendering injustice to the horse, making him a sort of wild beast that stands in need of being *tamed*. Instead of which, we hold him, from his natural inoffensive disposition, to require nothing of the sort, but has been most kindly delivered to our hands by a merciful Creator, neither wild nor mischievous, but only requiring a little gentle breaking in, or education, without any punishing him, or injuring him, to become the docile, faithful, laborious, ready helpmate of man, that could be possibly desired.

"His education, we hold, should consist of gaining his friendship and confidence by gentle measures, and not by deceiving him and punishing him, by throwing him down and frightening him, and grievously *sweating* him, and accompanied with all sorts of fears and apprehensions.

"The most noble of dispositions, we know, may be subdued by extreme punishment and severity; but is this the way to make a loving, obedient slave, that should have pleasure in giving satisfaction to all reasonable demands, and, in return for it, receiving kindness and rewards?

"Better works than this exist, and should have been consulted by this writer for the newspapers, as, for instance, Beranger's second edition on the Horse, copied into Rees's Cyclopædia, and again copied in Clark's works on the Bits of Horses, which far transcends every suggestion in this volume. Treachery of all kinds, we believe, to a noble animal of this description should be avoided, and the obtaining his love and confidence should be our chief aim, by patient sedulous measures, which it is not our business here to reiterate; and as to Beranger and some others, of whose labours we cannot suppose him entirely ignorant, but of which there is not even a mention; and, indeed, as a system of general *Horse-Breaking* it is almost useless, and inferior to works we already possess on the subject."[1]

There is so much truth in the remarks made on the character and conduct of a wild horse and a tame one, that we are tempted to quote the following from Sir Francis Head's work:—

"It is generally conceived that, in the difficulty of adhering, technically termed sticking to the back of a horse, there exist three degrees of comparison, namely:—

"1. That it is rather difficult to ride a horse that has been broken in.

"2. That it is exceedingly difficult to ride one that has been petted, patted, bitted, lounged, but not mounted.

"3. That it must be almost impossible to mount and ride a wild horse just caught, that has never been touched by a human hand.

"We will, however, humbly venture to assert that, in certain instances, the three steps of this little ladder might be reversed.

"1. In a state of nature, the horse is such a zealous advocate of our popular principle of 'self-government,' he is so desirous to maintain his 'independence,' that although he will allow almost any quadruped, even wolves and lions to approach within a certain distance, yet the moment he sees a man, though on horseback, he instinctively turns his tail towards him, and, when followed, gallops away.

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[1] *Fragmenta Veterinaria.* P. 12.

"If, consequently, by the triumph of reason over instinct, he be caught, or rather by the lasso tumbled head over heels, saddled, and if all of a sudden, to his vast astonishment, he finds sitting astride his back, with a cigar in his mouth, the very human being he has always been avoiding, his first and almost only feeling is that of *fear;* and accordingly, if he be retained by the bridle, instantaneously, by a series of jumps on all four legs, he makes impromptu his first hurried, untaught, unpractised effort to dislocate a rider. But if, instead of being, as it were, invited to perform these unsophisticated antics, he be allowed, or rather, by whip and severe spurs, be propelled to do what he most ardently desires, namely, run away, his power of resistance is over, and his subjection inevitable. For, at the top of his speed, just as when swimming, a horse can neither rear, kick, nor plunge, and, therefore, at his best pace he proceeds on his sure road to ruin, until not only all his wind is pumped out of him, but after that, until twisted hide-thong and sharp iron have converted his terror of man into an ardent desire to be obedient to his will. In fact, like a small nation that has unsuccessfully been contending against a great one, he wishes to put an end to the horrors of war, and to sue for the blessings of peace.

"2. If a domestic horse that has been handled, fondled, but never ridden, be suddenly saddled and mounted, the rider has greater difficulties to encounter than those just described: for the animal is not only gifted by nature with all the propensities of the wild horse to reject man, but, from being better fed, he has greater strength to indulge in them; besides which, he enjoys the immense advantage of being in a civilized, or, in plainer terms, an enclosed country. Accordingly, instead of being forced to run away, his rider is particularly afraid lest he should do so, simply because he knows, that the remedy which would cure the wild horse would probably kill *him.* In fact, the difference to the rider between an open and an enclosed field of battle is exactly that which a naval officer feels in scudding in a gale of wind out of sight of land, and in being caught among sandbanks and rocks in a narrow channel.

"3. Of all descriptions of horses, wild and tame, by far the most difficult to ride is that young British thorough-bred colt, of two or three years old, that has been regularly 'broken in' *by himself,* without giving the slightest warning, to jump away sideways, spin round, and at the same moment kick off his rider. The feat is a beautiful and well arranged combination of nature and of art. Like the pugilistic champion of England—Tom Sayers—he is a professional performer, gifted with so much strength and activity, and skilful in so many quick, artful tricks and dodges, that any country practitioner who comes to deal with him is no sooner up than down, to rise from his mother earth with a vague, bewildered, incoherent idea as to what had befallen him, or 'how he got there.'

"If a horse of this description and a wild one were to be mounted simultaneously, each by an equally good rider, in an unenclosed, uncultivated region, both the quadrupeds, probably at the same moment, would be seen to run away; the Briton for ever, to gain his liberty; the other quadruped, just as surely, to lose it!"

Space will not allow us to refer to the chapter on riding, spurs, hunting, the stable, and other subjects. A short chapter on shoeing indicates the writer to be an acute observer, though, like most people, he knows only a part of the truth. He refers in a happy manner to the rebounding and elastic nature of the horse's foot; and, on the subject of roughing, he has noticed the injury which results from sharp, long heels situated under the surface of bearing, and tilting the animal's limb forwards. Sir Francis, however, does not know that it is possible to have heels on shoes, without the necessity for toe pieces to obtain a natural bearing for the horse. It is obtained by a long shoe with an appropriate fit, so that the properly directed calk-

ing extends behind the heel of the foot, and does not displace the latter as when it is beneath it.

Having condemned many practices adopted by fashion, such as cropping or piercing ears, and docking tails, Sir Francis refers to singeing, stating its early history in this country:—

"About fifty years ago, during the Peninsular war, it was observed that the Spanish muleteers gave to the animals they had charge of great apparent relief, by rudely shearing off the hair that covered their bodies; and on the idea being imported into England, our hunting men, principally at Melton, commenced the practice by 'clipping,' at a cost at first of about five guineas, their hunters.

"This operation, which in its infancy occupied four or five days, was succeeded by the practice of shaving, which, in about as many hours, left the animal as bare as the hide of a pig that had just been killed, scalded, and scraped.

"This latter operation, however, was found to be attended with two opposite disadvantages: for, if perpetrated too soon, it required to be repeated, or rather to be succeeded by clipping; and if delayed till the growth of the thick coat had subsided, the horse remained throughout the winter naked like an elephant.

"In order, therefore, to shorten the coat exactly in proportion to its uncertain growth, it was determined gradually and repeatedly to burn it by fire to the minimum length prescribed, that is, leaving only sufficient to conceal the bare skin."

Sir Francis accepts the ordinary notions regarding the advantages of singeing or clipping, practices which we unconditionally condemn, and which favor the production of cracked heels, grease, and other affections. We have seen a young horse seized with tetanus immediately after having been clipped. Sir Francis fails in his physiological knowledge, in comparing the blood's circulation in man and horse. It is more rapid and active in the first than the second.

Much interesting matter follows the article on Singeing. The last chapter is devoted to the recommendation of useing chloroform in the horse, whenever painful operations are performed on him. Sir Francis should have devoted a chapter condemning the abuse of Firing. It would have been perhaps too veterinary; but, in the large majority of instances, "rest and time" will do all that was ever accomplished by "time and fire." Many veterinary surgeons to this day fire for curbs. It is as reasonable as to fire for the "lampas." If the horse with curbs has naturally defective hocks, he should be entirely removed from work calculated to induce curb; but if, as we find frequently the case, it is a young, raw four-year-old that "springs a curb" throw him off at once, and bring him out at five, unblemished, and fit for anything, We can assure Sir Francis, that old Will Williamson, whom he has referred to, would give him this advice, based on long and good experience. In order to ensure humanity to horses, veterinarians must be well taught. A sound system of veterinary teaching will do more for the horse, in preventing unnecessary suffering, than the efforts of Societies for the Prevention of Cruelty, or gallons of chloroform, of which many have been used by the writer of this notice. In conclusion, we must heartily, as we can honestly, recommend this work to all who wish to read or receive instruction regarding "The Horse and His Rider."

Cattle: Their Breed, Management, and Diseases, to which is added, the Dairy. Revised and Edited by WILLIAM and HUGH RAYNBIRD. London: Routledge, Warne, & Routledge, Farringdon Street.

THE little work we select for notice is one of a series of "Books for the Country," and has run through several editions, at the convenient price of eighteenpence. It is like other Books for the Country—likely to prove very expensive to all who are on the search for cheap information on questions affecting the lives of their animals. The number of dabblers in medicine is always considerable, and the difficulty of obtaining good veterinarians in many agricultural districts, induces the farmer to prepare for any emergency, by storing his mind in leisure hours. A cow is seized with some ailment, with symptoms calculated to alarm any non-professional person, and the farmer flies to his book. He believes it is a case of "Inflammatory Fever." The book says—"What is now to be done? First, bleed, aiming at once for all, and bleed freely, even to fainting; then give active aperients, and, if necessary, bleed again, but now with caution, and not within six or eight hours after the first operation, for the strength of the animal, and the state of its exhaustion, are points to be kept in mind; but recourse must be had to a second and copious bleeding, unless a decided improvement has already manifested itself."

The many Agricultural Papers which periodically give favourable notices to the class of works to which this one on Cattle belongs, should aim at ridding literature from such offensive productions. The harm they do cannot be calculated. We spoke strongly, a few months back, of a very bad book, bearing the not very euphonious title of "The Illustrated Horse Doctor." Its price would, however, limit its injurious influence, but the farmer's library should be supplied with sound as well as cheap works. Messrs Raynbird say—

"In entering upon the subject of the diseases of cattle, our plan will be to render it acceptable to the farmer or grazier who pretends to no anatomical knowledge, but yet is glad of some advice by which to be guided in the treatment of the more ordinary cases of malady which demand his attention. He cannot always have instant recourse to a veterinary surgeon, and in slight disorders may not deem it needful, though we must say we doubt the soundness of such policy. It is by the veterinary surgeon only that all operations must be performed; and, in cases of severe accidents, his skill must be called into requisition. Nothing is more to be reprobated than the practice, unhappily still too general, of applying to a farrier, ignorant alike of anatomy, physiology, and the symptoms of disease, or to a druggist, who is in the habit of compounding drenches of various nostrums (many worse than useless)—when the lives of cattle are at stake. This practice is the more inexcusable, when professed and well-educated veterinary practitioners are within the call of the farmer—and of such, few towns or rural districts are now destitute. It is not, however, for the veterinary surgeon that we now write; it is, as we have said, for the farmer, and that by way of guide and advice."

After such a paragraph, we have the most dangerous remedies prescribed for the most fatal diseases, with an amount of *sang-froid*

which cannot fail to alarm any person capable of judging, and who might suppose the medicaments ordered were to be used. We have already shown *what would be done* in a case of Inflammatory Fever, which the farmer might pretend he could diagnose. In a case of Pleurisy, he is told, that "The lancet is the sheet-anchor of hope, assisted by aperients, blisters, setons, and low diet."

In Enteritis, "Let not the *smallness* of the pulse deter from bleeding; blood should be taken even till symptoms of fainting appear; to this should succeed purgatives, the first a full dose, followed at intervals by smaller doses, till the bowels act freely." Farther on, we find: "Anodynes, that is, preparations of opium, are very useful. Immediately after bleeding an anodyne may be given, half an hour before the aperient medicine; it may simply consist of half-an-ounce or an ounce of laudanum, or half a drachm of powdered opium in gruel." Thus are poor animals destroyed, and thus is the British public imposed upon by the book-maker, who knows nothing of his subject, and the publisher, whose only object is, *to get a cheap book to sell.* Again we ask Agricultural Editors, in the interest of the British Farmer, to lend their aid in checking the publication of bad veterinary works for those who know nothing of veterinary science.

Year Book of Agricultural Facts for 1860. Edited by Robert Scott Burn. William Blackwood & Sons: Edinburgh and London. 1861.

We confess a decided partiality for the judicious compilation, on any special subject, of material such as that most carefully brought together in the "Year Book of Agricultural Facts." For practical men who cannot afford, and would not be inclined if they could afford, to purchase the host of periodicals which appear on agricultural subjects, such an annual as that of Mr Burn must prove invaluable. We have carefully looked through the collection of articles, and think they most fairly and satisfactorily represent the important contributions to Agricultural literature, whether in the theoretical or practical departments.

EDINBURGH VETERINARY REVIEW
AND
Annals of Comparative Pathology.

EMPIRICISM.

A LEGALLY constituted professional body is bound to regard as empirics all who practise and do not hold the legal diploma, and are consequently not subject to the laws of the profession. It is this circumstance which renders it particularly unfortunate that a large number of veterinary students, well-meaning and earnest in their desire to be respectable and duly-qualified veterinarians, have been misled, and induced to take a worthless document for a couple of pounds, which was declared worth the seven-guinea one of the Royal College of Veterinary Surgeons. It is not new to the world that charters and bye-laws of any institution go for years unread, and the veterinary profession in Britain has not been fortunate in having resolute champions to preserve its integrity and influence as a corporate body. The unread charters and bye-laws have not had earnest exponents, and the result is, that a profession necessarily limited in numbers, is weakened by a considerable section, not of seceders, not of reformers, not of men who advocate peculiar principles, and obey their conscience in fighting an authorised body, but of men who, commencing their studies to enter this legally constituted profession, ignorant of its laws, believe the first man who speaks to them, and are unwittingly satisfied with a document which in no sense raises them above the cow leech and farrier they have been in the habit of despising. However remarkable it may be, it is none the less a fact, that between two or three hundred practitioners who have studied at the Edinburgh College, are not veterinary surgeons by law, and whatever plan may now be adopted to ensure the rights and privileges of the profession, these gentlemen can no more claim the benefit by any act past than the empiric they have so frequently and so uselessly scorned.

If the profession is to battle against its great opponent Empiri-

cism; if every person obtained what he thought was a good diploma, and thinks it a disgrace that uneducated men should be allowed to encroach on his field of labour and profits, let him ask himself—"Am I, or am I not a veterinary surgeon?" He will find his answer in the Charter of the Royal College. It is easy to become one, if he holds the spurious Edinburgh certificate, and let him turn his attention at once in order to battle effectually with Empiricism, and hold an unquestionable position, to escape from being called a non-qualified man himself. The movement commenced last year with men who had respectively held the positions of teachers and examiners at the Edinburgh College. Let us hope that we may soon form a compact body, and that the hints thrown out in the last number of the *Review* may be acted on to the advantage of all, and to the honour and distinction of our profession.

SUMMER SESSIONS.

THE advertisements of the New Veterinary College announce, as usual, a course of scientific and practical instruction for the approaching Summer. The course is suited both for beginners, and those preparing for examination. No less than Six Courses of Lectures are mentioned, and an attempt is made to render as complete and useful the Summer Session's study as that of the Winter. Why veterinary students should think, as they generally do, that they need only work from November till May, and that they may spend the valuable months from May to November in the country, is a mystery; and it has long been seen that a change must take place, so as to render more complete the course of Veterinary Education. A double inducement is offered by the New Veterinary College. In the first place, a junior student may, by assiduity and intelligence, secure a free studentship in the New Veterinary College, if he compete for the prize at the end of the Summer Session. Secondly, All who do not feel quite prepared for examination in April, may, by prolonging their study at College for only three months, present themselves before the Board in August. We consider this better than the Christmas examination, which occurs at a period of the Winter Session when little advantage can have been derived from that Session's teaching, and the student is no better prepared than if the examination occurred before the opening of the Course.

BRACY CLARK *v.* STRICKLAND FREEMAN.

THE correspondent who favoured us last month with the authentic and highly-prized biographical sketch of Mr Bracy Clark, doubts the claims of Mr Strickland Freeman to be regarded as having preceded Mr Clark in the exposition of the elastic properties of the horse's foot. The subject is one which will be shortly set at rest in the forthcoming work of Mr Gamgee, senr.; meanwhile a few questions may tend to justify the critical opinion we have expressed.

"The spring of the foot," to use Mr Freeman's words (p. 30 *op. cit.*) "depends on the free motion of the nut-bone upon the flexor tendon." The idea of elasticity here crudely expressed, is elsewhere more fully and unmistakeably developed. Thus, at p. 18:—"As this laminated substance continues from the toe to each quarter, it is turned more and more aslant, by which it obtains a still greater power of *yielding to the shock;* the quarters being also made thinner, have still greater power of *expanding* themselves by a given impulse from the bones." In the same page the expression *lateral expansion* is used, and in another part of the work it is stated that "the frog is enabled to yield to *the expansion* of the foot, by having a longitudinal cleft in the opening or in the middle." Then again at p. 70:—"The quarters which in the fore-foot were thin and *elastic*, in the hind feet are very strong, and prevent *the expansion* of the hind-foot, which was required to be preserved to the utmost in the fore-foot. . . . . When ossification takes place in the fore-foot, the quarters are so strong and narrow as not to admit of expansion." Mr Freeman's preface is dated Fawley Court, Feb. 10, 1796, and the work was published in the same year. How can Mr Bracy Clark be said to have discovered the principle of elasticity of the horse's foot in 1804? We most heartily acquit him of plagiarism, and are prepared to admit, that though he may have been aware of the existence of Mr Strickland Freeman's work, he had not a just conception of its great merits. We have no desire of disparaging one great man, while discharging a debt of conscience in vindicating the oft-forgotten merits of another.

LADY CHESTERFIELD'S PIGS.

WE have been induced to re-print in extenso (p. 181) the correspondence which has taken place with reference to the age of three pigs passed in Birmingham, and disqualified in London, by Professor

Simonds, from a conviction that the issue of the discussion must materially affect the management of such national exhibitions as those held every Christmas in the metropolis, under the auspices of the Smithfield Club, and in the capital of the midland counties, under the direction of a body of gentlemen known as "The Council of the Birmingham Cattle Show." Many of our readers are doubtless aware that these exhibitions are so timed that the same animals may compete at both,—in Warwickshire one week, and the next in London. No accurate estimate can be formed of the advantages which have resulted from these competitions, and it is equally impossible to over-rate the importance of any questions affecting the same happy results in future years. Such a question is now pending. The main facts are very few. Professor Simonds is the referee for the ages of the animals exhibited at both shows; at Birmingham he has a coadjutor in Mr R. L. Hunt, a gentleman in the foremost rank amongst the veterinary surgeons of Great Britain. The Countess of Chesterfield having obtained a first prize for three pigs, at Bingley Hall, decided to show them in Baker Street, where they were disqualified on the ground that two were younger than the age stated. The prize was awarded in the first instance with Professor Simonds' concurrence, it was denied in the second on his testimony. Mr Hunt, evidently actuated by a generous impulse, steps in to support his colleague, and the gist of their defence is this: That the same pigs were objected to, and for the same reason, at Birmingham, but that after consultation with the yard-stewards in Bingley Hall, it was agreed that they should not be disqualified. This statement is denied by the Birmingham Council; but to simplify the question, we admit it. How could Professor Simonds and Mr Hunt confer with the yard-stewards on a matter delegated to them with unlimited powers by the Council? Assuming that the yard-stewards interfered improperly, or that the judges disregarded the opinion of the veterinary referees, why did not these gentlemen protest to the superior authority? In the absence of protest, must they not be held to have concurred in the justice of the award in Bingley Hall? If so, how could the Professor act differently in London? The dilemma is not of our own creation; we have accepted his version of the facts.

We incline to the opinion, notwithstanding the objection of the Earl of Chesterfield's agents, that the pigs, originally admitted to competition in Birmingham, were justly disqualified in London, and we

are curious to know how the veterinary referees will eventually relieve themselves of the responsibility which at present weighs on them, of having permitted an unjust award. Our sympathies are with our professional brethren, but impartiality of judgment is not consistent with the action influenced of personal predilections.

The discussion, however much to be regretted on some grounds, will have done much good, if it induce the Birmingham Council to inquire rigidly into the management of their exhibitions, and to correct little irregularities which have crept in unnoticed, in their long succession of prosperous years. It is likewise to be hoped that gentlemen discharging the duties of professional referees, at such exhibitions, will make their reports in writing to the respective councils, retaining copies, and under no circumstances admitting yard-stewards to consultations on exclusively professional questions.

FINE LANGUAGE AND TECHNICALITIES.

PURE Saxon has such charms for the well-bred man of society now-a-days, that any person or class of persons attempting to prove scientific or learned by the jargon which has often crept into medical and veterinary language, cannot fail to be set down as utterly senseless. It is an attribute of the charlatan to talk much and be mysterious. It is characteristic of the sound and confident practitioner in medicine, whether human or veterinary, to talk simply, openly, and without affectation. To explain everything and speak to the humblest individual with the greatest amount of candour, is the only way to acquire that ascendancy of mind over matter which should distinguish a professional man.

A quotation in a happy article on samples of Fine English in the *Cornhill Magazine* reminds us of the many absurdities which professional men have committed in attempts to show off. "A mother took her sick child to a low-class surgeon. He said, 'I see your young lady has premonitory symptoms of incipient rubeola.' She took her to one of the most famous London physicians, who said, 'The child is going to have the measles.'" We are at one with the author of the article here quoted on the folly of the circumlocution system adopted by men of no standing professionally. When, however, he says sarcastically, "A horse doctor now calls himself a veterinary surgeon," he errs in regarding the latter expression as implying only the title

Horse Doctor. It is the best expression to use in referring to a class of professional men who doctor asses and oxen, dogs and cats, as well as horses. We do not confess to be at all thin-skinned on this subject, though some believe that Veterinary Surgeon is now a vulgar title, and we should call ourselves Zooiatrists—we then should deserve the lash for pedantry.

To use the words, "rammolissement" instead of "softening," "nicotiana" instead of "tobacco," "incipient" instead of "commencing," and many similar, is usually an indication of a shallow mind. A young man having passed his examinations, and settled in practice amidst the quiet, unassuming farmers of a northern county, translated his name, "William," into "Guglielmus," to acquire greater importance. There are not many who put their belief in the charm of Latin terms to this extent. Science requires a scientific language, but the truly scientific man should be simpler in speech and manner than the many he meets, who are intellectually his inferior.

OUR ARMY FARRIERS.

We are happy to see that the army farrier has been advanced materially by measures suggested and brought about by Principal Veterinary Surgeon Wilkinson. We reprint the Royal Warrant conferring on them an improved position and better pay. This is of great importance to ensure the efficiency of farriers in the British army, but some means must yet be adopted to instruct the farrier in his art, and he should be made to attend lectures on the principles and practice of shoeing, as well as to study practically under competent teachers. Great improvements have yet to be introduced, and Mr Wilkinson has thus far proved favourable to any change calculated to increase the efficiency of the important body he superintends.

ROYAL WARRANT RELATING TO THE FARRIERY DEPARTMENT IN HER MAJESTY'S SERVICE.

Victoria R.—Whereas we have judged it expedient to revise those parts of Our Royal Warrant of the 1st July, 1848, which regulates the rates of pay of the Farrier Major and Farriers, and the rate and appropriation of the Farriery allowance to regiments of Cavalry, and other mounted Corps of Our Army.

Our Will and Pleasure is, that in all regiments of Cavalry and other mounted corps (the Royal Artillery and the Royal Engineer Train excepted) the pay of the Farrier Major, Farriers, and Shoeing Smith, of which latter class there shall be one to each troop, to act as assistant to the Farrier, shall, from the date of this Our Royal Warrant, be as follows, viz.:—

	Life Guards.	Horse Guards.	Cavalry, including Military Train.	Cape Mounted Riflemen.
	s. *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*
Farrier Major	4 0 a-day	3 9 a-day	3 8 a-day	3 4 a-day
Farrier	3 2 „	2 11 „	2 6 „	2 3 „
Shoeing Smith	2 7 „	2 4 „	1 11 „	1 8 „

The Farrier Major, while serving, shall have the rank and clothing of a Quartermaster Sergeant, and, on discharge, the pension of that rank.

The Farrier, while serving, shall have the relative rank and the clothing of Sergeant, and on discharge a special rate of pension equal to that of Sergeant.

The Shoeing Smith shall be of the rank of private.

The Farrier and Shoeing Smith shall be entitled to all the advantages of the Good Conduct Regulations.

The Farriery allowance for all services, including the Royal Artillery and Royal Engineer Train, shall be fixed at One halfpenny a-day for each effective troop horse on Home Service, which is to be paid to the Troop or Battery Farrier, for the provision of iron, fuel, and tools.

When a regiment or detachment shall proceed on Foreign Service, the Farriery allowance shall cease from the date of disembarkation, the supply of Shoes and Shoeing Tools being then made from the public stores. The shoes on the horses' feet at the time of landing shall be considered the property of the public, for which an equivalent will have been received by the Farrier, from the Halfpenny a-day allowed for each horse while on board ship.

Given at Our Court, at St James's, this Fourth day of February, 1860, in the Twenty-third Year of Our Reign.

By Her Majesty's Command.

SIDNEY HERBERT.

MEETING OF SOCIETY.

—o—

WEST OF SCOTLAND VETERINARY MEDICAL ASSOCIATION.

The annual meeting of the West of Scotland Veterinary Medical Association was held in Glasgow, on 28th December, 1860. In the absence of Mr Cockburn, Mr Steele of Biggar was called to the chair. The minutes of the previous meeting having been read and approved of, Professor Gamgee asked if the society had not yet elected a patron, stating that he considered it almost a *sine qua non* to its progress, the fact of having a respectable nobleman, one who took an interest in the veterinary profession and agriculture; and if not yet elected, he would propose that at this meeting a patron be nominated.

Mr Anderson said, that at a previous meeting it had been discussed, but that the general opinion of the members was, that before proceeding to such a course they had better wait a little to see how the society would succeed.

Mr Robinson said that Sir M. R. S. Stewart, Bart., M.P., had been suggested, and he thought that it was generally understood by the members, that if they succeeded in keeping the society well together, and saw positive appearances of its progress, they would solicit him to be their patron.

Professor Gamgee said he would not press at this time the election of a patron, but he thought it would be a great advantage to the society the electing of such a nobleman as Mr Robinson has spoken of.

Mr Pottie seconded Professor Gamgee's motion, stating that the society was now in a good and prosperous condition, and that they should not delay any longer in having a patron.

Mr Dunlop said they were all as one respecting having a patron, but they were merely anxious to have the society in a position that would do that patron some little honour in being connected with it.

Mr Anderson then proposed Sir M. R. S. Stewart, seconded by Mr Steele.

Mr M'Call thought, that to appoint a patron at this meeting would be too premature. He, as an amendment, moved, that previous intimation be given to all the members, per circular. On taking the vote of the meeting, the amendment was carried.

Mr Anderson proposed Mr Steele as president of the society for the ensuing year, seconded by Mr M'Call.

Mr Robinson proposed Mr Pottie as secretary, seconded by Professor Gamgee.

Mr Anderson proposed that Mr Dunlop should be re-elected a vice-president, and Mr Robinson be also elected a vice-president, which was seconded by Mr Pottie, and agreed to.

Mr Robinson proposed Mr M'Call as a vice-president, which was duly seconded, and agreed to.

Professor Gamgee proposed that Mr Marshall be re-elected as treasurer, which being seconded, was agreed to.

The following gentlemen were then elected directors—Messrs Anderson, Cockburn, Sharp, Howatt, Mitchell, Donaldson, Dobie, and Blackie.

Professor Gamgee then said, that although departing from the general business of the meeting, he would ask permission to make a few remarks on a subject which should not be overlooked by a body of British veterinarians, met as they were that day. He alluded to the death of that most distinguished ornament of the veterinary profession, Mr Bracy Clark. The illustrious veterinarian, who had just departed this life at the venerable age of 90, was one of the first students of the London Veterinary College. Urged on by his elder brother to enter a new-born profession, which had the great recommendation of meeting an urgent want of all owners of stock, he laboured zealously to become proficient in his adopted calling. His career of study was prolonged; and it was only several years after receiving his diploma that he was in the active exercise of his duties as a veterinary practitioner. From that period, however, to the day of his death,

Bracy Clark laboured hard for the advancement of science, for the benefit of the noble animal the horse, which he admired and regarded with the greatest affection, and for the benefit of the profession—with whose rulers he did not at all times agree, particularly on scientific subjects. He proved himself an able entymologist, and his careful and lucid researches on the genus œstrus added one great series of facts in opposition to views then held by scientific men regarding spontaneous generation. Although his labours in connection with the art of shoeing cannot be said to have led to any practical change of great benefit in farriery, nevertheless we must regard the splendid works on this subject as those of a man of genius, enlightened by literary labours of remarkable profundity, and assisted by a spirit of close observation and experimentation, which are the only attributes capable of enabling a man to accomplish what Bracy Clark did. I shall not detain you on the many subjects to which Mr Clark devoted his time and pen: they all indicate how great and earnest was the man in the pursuit and diffusion of knowledge. He reaped higher honors than any person that has yet entered our profession, whether here or abroad. He was justly made a Fellow of the Linnæan Society. He was created a member of the Royal Institute of France, and many other learned bodies readily admitted him in recognition of his exceptional merits. No name ever conferred a similar amount of distinction on British veterinarians. If reference be made abroad to the position of our science in Her Majesty's dominions, Bracy Clark used to be mentioned as an indication of our being above all others. Let us not forget him, now that he is dead; and I esteem it a privilege to have it in my power to-day, at the first meeting of veterinarians since Mr Clark's demise, to propose that a vote be recorded in testimony of the high esteem and veneration felt for the late Mr Bracy Clark, F.L.S., coupled with an expression of condolence and sympathy with his relatives. Professor Gamgee also proposed that the secretary should transmit a copy of the resolution to Mr Clark's daughter, Mrs Pope, in London, seconded by Mr Dunlop.

Mr Marshall being called upon, read an interesting paper on Influenza, which was listened to with marked attention.

Professor Gamgee said, the subject chosen was very suitable, the disease being at present very prevalent. He stated that he had a vast number of cases in Edinburgh, and was happy to say, that he had not to record one single death. Influenza assumed very various forms in different countries and at different periods of its attack. It sometimes approached most the character of a catarrhal fever, at others that of a rheumatic fever, and sometimes a catarrho-rheumatic form; at all times great prostration manifested itself. The disease he had to treat during the past autumn was of a catarrho-rheumatic type, and he recommended at first a mild aperient—clysters—large mustard embrocations to the throat and chest. He put great dependence on the aperient in checking the progress of the disease, and if practicable, to induce a diaphoretic action, and spoke highly of the advantage of a Turkish bath being connected with every veterinary establishment; but in lieu of the bath to bring about diaphoresis, he gave Camphor and Liq. Amon. Acet. ʒiii. to ʒvi. two and three times a-day, with warm clothing. He also, in cases where there were symptoms of effusion, gave digitalis in ʒi. doses, combined with nitre, three times a-day for two days. He considered blood-letting very bad treatment, and ascribed the cause of the disease to a poison in the blood.

Professor Gamgee, on being asked what drug he gave as an aperient? said Cape aloes.

Mr Steele agreed with Professor Gamgee in all his treatment, excepting the administration of aloes, and asked in what doses Professor Gamgee prescribed it.

Professor Gamgee said, that his father had made a series of experiments with Cape aloes, and had satisfied himself, that in doses of from ʒv. to ʒviii. it was a much milder purgative than the Barbadoes, and much safer in influenza cases; in such cases, he generally gave from ʒiv. to ʒvi.

Mr M'Call differed with Professor Gamgee in the giving of aloes; in any of his cases, he said, he never found *one* that he would have considered it safe to administer aloes. He dreaded this drug much from the predisposition this disease

had to diarrhœa. He never had any difficulty in getting the bowels to his mind by the administration of ʒi. doses of calomel daily, he also gave Liq. Amon. Acet.; and to induce diaphoresis, he sponged the animal all over with cold water, enveloped the body with warm clothing, and bandaged the legs their entire length; and in cases of purpura hæmorrhagica, he had been singularly fortunate by this method of treatment.

Professor Gamgee denied that there was any such disease as purpura hæmorrhagica seen in the horse, and that the cases Mr M'Call referred to would in all probability be cases of typhus.

Mr M'Call said he was aware Professor Gamgee disputed the existence of this disease in the horse, but he merely used that term as it was generally understood.

Mr Anderson related a few unfortunate cases that he had treated for this disease. His opinion was that its seat lay principally in the kidneys. In all the *post-mortem* examinations he had made, he found these glands white, soft, and flabby; and was also of opinion, that the swellings produced in different parts of the body were caused by the urine becoming absorbed into the system—the kidneys ceasing to act.

Professor Gamgee thought the whole secret to be a poison in the blood, and the reason of the appearances of the kidneys after death described by Mr Anderson, in his opinion, was owing to their being excretory organs, and being partly their duty to relieve the blood of its poison, in doing which they became affected.

Mr Robinson related a case of influenza, in which metastasis took place, the peculiarity being, that one foot only was affected; the horse appeared to be in great agony, holding up the foot and actually crying out. The shoe was immediately taken off—the animal freely bled from the toe, and the foot poulticed. On the following day he appeared a little easier, the bleeding from the toe was repeated, and the case otherwise treated for laminitis, and ultimately recovered.

Mr M'Call inquired of Professor Gamgee what the poison that he asserted to be the cause of influenza was?

Professor Gamgee said, that perhaps this was one of the most difficult questions in the profession, as all researches had failed to distinguish any difference in the poisons of different diseases; but that it must be one analogous to the poison in typhus in the human subject.

Mr M'Call could not agree with Professor Gamgee in attributing the cause of this disease to a blood poison, but thought it was an excited cattarrh with derangement of the liver.

Mr Steele said, that as this was opening up a new field of discussion, and the hour being now late, he thought they had better continue this subject till next meeting. A vote of thanks was then awarded to Mr Marshall for his valuable paper, and to the Chairman.

Mr Dunlop proposed that the secretary report the proceedings of the meeting to the *Veterinarian*, and to the *Edinburgh Veterinary Review*.

ALEXANDER ROBINSON,
Sec. *pro tem.*

The members then, accompanied by a few of the students now attending the classes at Edinburgh, adjourned to the dining-hall. Mr Steele was called to the chair; and the cloth having been removed, and the usual loyal and patriotic toasts disposed of, he said that the next toast on the programme was "The West of Scotland Veterinary Medical Association," to which he observed Mr Pottie's name to be attached.

Mr Pottie then, in an interesting speech, proposed "The West of Scotland Veterinary Medical Association." He observed that the object of the Association was the promotion of their interests as veterinary surgeons, by enriching their minds with scientific knowledge, by mutual exchange of original observations, and by uniting themselves in a professional brotherhood. It was to be wondered at, that in an age so much characterised by combination, the veterinary profession had been so long wanting its recognised Society. It was to be accounted for by the

idea that its members were not alive to its importance, or that they had some doubts as to the truth of their own motto "Vis Unita Fortior"—Union is strength. The thanks of the veterinary profession in Scotland are due to their brethren of the West for having been the originators and founders of this society. These gentlemen were, he was proud to say, still in their midst, and by their example continue to infuse life through the rest of its members. He was surprised that the old worthies of the art of Glasgow and its neighbourhood had not seen the propriety of at least once a-year assembling in Glasgow and exchanging tokens of mutual esteem, and bringing up recollections of their youthful experiences To those who have been years in practice, the society must be of especial benefit, as it gave them an opportunity of consulting and debating on cases of rarity and perplexity, which was far more practical than any advice obtainable of professors, editors, &c., by correspondence, could be. He observed that the profession had still to contend with quacks and ignorant pretenders. Unlike the human practitioner, the veterinary surgeons had no protection of the law; but he hoped that through the instrumentality of such societies as the West of Scotland Veterinary Medical Association, this great drawback to the advancement of the profession would be annihilated, and that a "discerning public" would be led to see their own advantage in employing a person, who by means of years of study and intelligent application had made himself master of an honourable calling It was only through a determined movement of such a body, such as their society, that any head way could be made against such a tide of professional quackery, individual efforts at reform being as ineffectual compared to this united force as the scattered fire of skirmishers was to the collected and well-sustained volleys of a compact body of troops. He therefore urged the necessity and importance of united efforts, and recommended that they should endeavour to increase their numbers, not from the members of the West of Scotland only, but also from the other quarters of their native land. He believed that the society had already done much good to its members, and was destined yet to do more, as it was, comparatively speaking, but in its infancy. He concluded by requesting the members to fill and drink a bumper to the "Success of the West of Scotland Veterinary Medical Association."

Mr Marshall, in a very neat and appropriate speech, proposed "The Veterinary Institutions."

Professor Gamgee replied.

Mr M'Call rose and said—Mr Chairman and Gentlemen—From the programme now placed before me, I observe, that the next toast, and that with which my name is linked, is that of "The Veterinary Professors." And need I say that I believe it merits a flowing bumper—nay, gentlemen, it merits one and an additional "three times three," for what is any institution, be it educational or otherwise without its Professors. It is neither more nor less than a shadow without a reality, and seeing, then, that our friend Mr Marshall, with his "Veterinary Institutions," or *shadow*, has called forth a flowing bumper, sure am I you will not refuse my *reality* an additional "three times three." The toast, gentlemen, is one of great difficulty for me to handle, not only on account of its exceeding delicacy, but, moreover, on account of having myself within the last two years formed one of those gentlemen, to whose honour I now ask you to pledge a bumper. To review the works of the Professors of our various Veterinary Institutions, would, at the present moment, to say the least, be folly to attempt, and I think as much out of place would it be to essay to give an opinion upon the relative personal merits of those same gentlemen—or to say how perfectly or imperfectly the different professional chairs are filled. Passing then from personalities, in which I have no desire to indulge, I would crave permission to make a few general observations. It is a fact, the truth of which all will verify, that the more united the leaders of a party are, the more certain is that party ultimately, ay! and in the shortest space of time, to attain the objects they essay. Apply this axiom to our profession, and see how it stands the test. I will not ask you to follow me to other countries, leaving these for the present to themselves, and confining your inquiries to this country. It will be found, that throughout the

length and breadth of Great Britain and Ireland, the animosity of the colleges is proverbial. And now, having ascertained that such animosity does exist, inquire as to the cause or causes, and it will be found, that a diploma and rivalship is at the bottom of it all. Were you, gentlemen, not acquainted with the relative *pros* and *cons*, I would relate the merits; but being in this respect as well versed as myself, I defer. Institutions having similar objects in view, no doubt, will at times differ, and such differences, generally speaking, are calculated to promulgate truth, and thus advance the interests of such institutions; but when the leaders or professors of such institutions leave the dissenting subject out of view, and condescend to make *personal* attacks upon their brother professors—and that, too, before their students—then I hold that that restraint which their position necessarily carries with it, must be thrown aside, and we, in justice to ourselves and our beloved profession, are called upon to step forward and censure such proceedings as being alike ungentlemanly, unprofessional, and uncalled for. To be a professor, carries with it an amount of responsibility, which men, when in such capacity, are too apt to overlook. It is true, a casual inquirer would be apt to suppose, that an intimate acquaintance with the subject professed, was all essentially requisite to the efficient discharge of such an office; but this is a mere item, although a great one. While we admit that the sphere of a Veterinary Professor is especially intellectual, still we hold he is bound at all times to temper that intellectual tuition with morality. In short, not only should he store the mind of his pupil with knowledge, which shall make him useful in, and ornamental to, his profession, but also fill his heart with a charity which desires to injure the feelings of no one, and an honour which will make him proof to every temptation. But, gentlemen, I must not take up too much of your time, still permit me to add one word. Eighteen hundred and sixty is near its close, and like other years, it records joy to some, grief to others—some entering upon their profession, others resigning its active duties, and some gone to give in an "account of the deeds done in the body." It is not my intention to speak of the dead, otherwise would I drop a word in memory of my instructor, friend, and predecessor in office, the late Professor John Barlow, and the more recent demise of one of our grateful ornaments—Mr Bracy Clark—no! it is to speak of one, who although living, and I hope for many, many long years may still be spared amongst us, has during the sand-grain race of sixty, resigned his professorial chair. It pained me, gentlemen, to propose "The Veterinary Professors," and leave this worthy old gentleman out. I allude to Professor Morton of the London Veterinary College. I have not the honour of calling him a personal friend, for we never met, but like many others, I have not only the pleasure but profit of saying, that his writings have been a friend to me. Yes, gentlemen, writings which are all alike creditable to his name and position—showing an amount of scientific and philosophic inquiry, which few in the Veterinary Profession can lay claim to. And now, gentlemen, although not in strict accordance with the programme, I trust you will permit and join with me in drinking a bumper to the health, long life, and prosperity of the Veterinary Professors, and ex-Professor Morton, coupled with the name of my friend, Professor Gamgee.

Professor Gamgee stated, that he experienced some degree of difficulty in responding to a toast so heartily proposed and so cordially accepted. It was well known that he had, on various occasions, disputed the fact, that veterinary professors have been, as they should always be, the friends of the profession. He cordially concurred in Mr M'Call's remarks on Professor Morton, and had every one perseveringly laboured in the right direction like Professor Morton, the profession might by this time have been in a different position. It was not on such an occasion as the present that he could discuss the relative merits of the gentlemen which he represented, as one of the teachers in a veterinary college, but he was certain of this, that most gratefully would every professor acknowledge the cordial manner in which his health had been proposed, and in the name of the general body of veterinary professors he begged to tender their most hearty thanks.

Professor Gamgee again rose, and said he had great pleasure in proposing the

"Council of the Royal College of Veterinary Surgeons." Every one present was aware of the peculiar position he had maintained in establishing the New Veterinary College in support of the corporate body. He regarded it as essential for the benefit of every veterinarian that the rights and privileges of the Royal College should be defended. He fought at considerable personal sacrifice against local prejudices and local usages, that the only legal diploma should be granted to veterinary students who, in their ignorance, presented themselves before an illegal board. He had the most perfect confidence in the Council of the Royal College, and trusted that every member aiming at being a veterinary surgeon should become so in the only way legally possible, by joining the corporate body. He begged, therefore, to propose the "Council of the Royal College of Veterinary Surgeons."

Mr Robinson then claimed the attention of the chair, and said—In proposing "The Health of Mr Cockburn and the other retiring Members," he thought that it was scarcely in keeping for himself, a retiring member, to propose such a toast. He wished them, therefore, to leave him out of view while he attempted briefly to speak of Mr Cockburn and his retiring colleagues. He observed that the success of any society mainly depended on the assiduity and enthusiasm of its office-bearers; they were, in fact, the great centre of action, which, when animated with a sincere desire for the society's welfare, diffused a spirit of animation throughout the rest of its members, and insured its success. He was proud to say the office-bearers now retiring had not lacked any of the qualities which constitute an efficient staff by their unwearied attention to the interests of the society; those gentlemen had not only by their precept, but also by their example, done much to bring it to its present state of advancement. It was perhaps desirable to change the office-bearers yearly; by this means those who had not taken an active part in the business of the society before were stimulated to fresh exertion. He was sorry that Mr Cockburn had not presided at their meetings so often as they would have wished; he was sure this did not arise from any deficiency on his part of interest in the society, but as the most of its members were aware, from ill health, which he was sure they would sincerely regret, as he was a gentleman possessed of good sound judgment, candour, and urbanity. Nothwithstanding all the progress the retiring office-bearers had made, he hoped and trusted that the staff elected to-day would this day twelve months far surpass them in point of progress, as regards both members and intellectual improvement They had lost in the last year an assiduous working member, in the person of Mr Charles Moir, who had removed from this city to what he considered a more lucrative field for his labours; he had written to him lately, enclosing a circular of this meeting, and had just received a letter from him, in which he desired to be remembered to them all, expressing his good wishes for the success of the society. They had also lost in the past year the services of Mr John Anderson, who was a very zealous office-bearer. Previous to his departure to New South Wales, to purchase horses for the regiment he was appointed to, he expressed to him (Mr Robinson) a strong desire that more of the society's meetings should be published in the *Veterinarian*, as nothing would give him greater pleasure than reading, while far from them, an account of its progress, associated with the names he had so much respect and affection for. Without saying more, he had much pleasure in asking them to join him in drinking the health of "Mr Cockburn and the other retiring Office-bearers."

Mr Wilson proposed, in a brief but suitable speech, the "Interests of the Agriculturist," touching upon the intimate connection existing between him and the veterinarian.

Mr Anderson then said he had great pleasure in offering for their acceptance a toast—it was the health of a gentleman who he was sure he had only to give his name to insure a very hearty response; they would all agree with him that a more anxious and persevering member was not connected with the society. From its very commencement up to the present time, he had wrought earnestly, and although residing at a considerable distance from this city, where all its meetings were held, he could not bring to mind one single meeting, either committee or

general, where that gentleman had been absent, and he was proud to say that everything he had undertaken connected with the interests of the society had been done with that amount of zeal and disinterestedness that demanded their very best thanks. Without saying more, he would crave a particular bumper to "The health of their esteemed friend Mr Robinson."

Mr Robinson, in reply, said that he was very glad to see that any little thing he had done for the furtherance of the society had been appreciated. He considered the performance of any business of the society that had been entrusted to him an imperative duty; but had it not been that his friend Mr Anderson, along with a few others, were actuated with as much if not a greater amount of enthusiasm, he was afraid there would have been a falling off on his part, but as his friend Mr Pottie had judiciously remarked *Vis Unita Fortior*, he hoped still to retain their good wishes, and thanked them for the honour they had done him.

Mr Pottie then rose and said there was still a very important toast which gave him great pleasure in offering them—it was "The health of Mr Anderson." He understood that that gentleman was the founder and nucleus of the society's growth, and he was very proud to see him still retain that lively interest in its advancement that characterised him in the getting of it up, and he hoped that he might live and enjoy good health to see it yet a great institution, which no doubt would be a great source of pleasure to him.

Mr Anderson rose and thanked Mr Pottie and the other gentlemen kindly for their good wishes, and said he had now no fears of the society prospering, as they were yearly adding to its numbers, and as a matter of course to its wealth, and that it was now in a good position both respecting members and cash. He hoped to be long spared to enjoy its meetings with them.

Mr Marshall had pleasure in proposing "The health of Mr M'Call." He said, that since his coming to Glasgow, he had taken a deep interest in the discussions of the society, and had shown evident signs of becoming a useful and valuable member. As that gentleman's abilities and good qualities were well known to them all, it required no further comment on his part to merit a hearty response.

Mr M'Call, in suitable terms, replied.

Mr Robinson begged to propose another toast—it was "The health of Professor Gamgee." He observed that it gave him much pleasure to witness that gentleman amongst them; when they considered his position in Edinburgh, and the distance he had travelled to be present here, they must feel proud of the society. He trusted that Professor Gamgee would stretch a point to be oftener present at its meetings, from which he believed that both the Professor and the society would benefit much.

Professor Gamgee said—I have spoken so often this evening, that I cannot venture again to tire your time and patience. Permit me, therefore, to thank you for the kind manner in which my health has been proposed and responded to.

Mr M'Call rose and said—Mr President and Gentlemen, I have so often appeared before you this evening, that I am almost ashamed again to solicit your ear, but I know that if the speaker is unworthy of another hearing, the parties of whom he would speak are not so, inasmuch as they must soon form one of our body—I refer to our young friends the veterinary students here present. As I am almost if not as young a practitioner in years as is here, it would not do for me to say with what joy and feelings of parental love I, the practitioner of veterinary science, look upon you its students. Leaving the *ego* out of view and substituting *nos*, the case, however, becomes very different, and what before was disallowed is now permitted. We then look upon your presence here this evening, gentlemen, with feelings of joy and honour—not, however, so much of the present as the future; we certainly feel joy in your presence, and honoured by your company, but the joy and honour we desire to feel is in *prospect*. This society, like the profession we follow, must cease to exist if we its present members were its sole support; its advancement then depends upon the yearly addition to its present number of a few others, and need I say that we feel joy and honour in the prospect of being able, say this day twelvemonth, of enrolling some of your names as members. But, gentlemen, we would have you remember

it is not your name and your money we want, for neither this society, our profession, nor any others are entitled to public respect if a few shillings can purchase admission; nay, on the contrary, what we desire is studious young men—men who will not be satisfied with any doctrine that may be thrust upon them, but who shall, the more surrounded by difficulties, the more ardently exert themselves. You are not to suppose that the College tuition being over, all you have then to do is to attend to the daily routine of your practice. No doubt by so doing you may in time amass a portion of this world's wealth, but the day will never come when you dare lay claim to the title of being scientific veterinarians. In short, gentlemen, what we want is men who will not rest satisfied till they view in every possible grade of light whatever subject may be brought forward here for discussion, or may pass under their hands in practice, and who, having maturely formed an opinion, will not hesitate to raise their voice in its defence; and allow us to tell you, and it is the voice of experience, that now is the day for forming those habits which must and only can bring about such happy results. Waste not your student days; they come but once, and are the golden opportunities of acquiring knowledge. Experience, sad experience, tells us that too many waste these moments under the fatal delusion they will yet overtake them, but did it ever turn out otherwise than a fallacy. No, as in the material, so in the intellectual world, progression is not marked by fits and starts, but by the daily and incessant accumulation of matter, till that which was at one time imperceptible ultimately becomes more complete, if not perfect. And now, gentlemen, leaving you with these words of admonition upon my lips, I have much pleasure in asking you, my fellow practitioners, to join me in pledging a toast to "The health and prosperity of the Veterinary Students present," coupled with the name of Mr Robb.

Mr Robb, on the part of the students, briefly replied.

Mr Anderson said, that before parting he had a most important toast to propose, for which he requested a flowing bumper—it was "The health of their worthy Chairman, Mr Steele." That gentleman was among the oldest veterinarians in Scotland. In his younger days veterinary surgeons were more scarce. He recollected hearing an anecdote respecting Mr Steele when newly licensed. A few farmers in his neighbourhood had met, and as the conversation went on, the subject of their College-bred veterinarian came above board; and to test his skill, proposed sending for him to examine one of their cows (a healthy cow). Consequently, Mr Steele was sent for, all eyes were upon him waiting his diagnosis. After having asked the usual questions respecting feeding, milking, &c., the farmer having said that she was doing neither very well, Mr Steele turned round to him and commenced by first stating that his fee was a guinea, and after getting possession of his fee, advised the farmer to instruct his guidwife to make a good cup of tea for the cow morning and evening, and that all would be right in a day or so.

Mr Steele replied, and after relating some parts of the joke referred to by Mr Anderson that had been omitted, thanked them kindly for the honour done him.

After which the company dispersed.

PERISCOPE.

NOTES ON LAMENESS IN THE HORSE.

By Joseph Gamgee, New Veterinary College, Edinburgh.

(*Continued from page* 115).

Reprinted from "The Field." Revised by the Author.

V. If, in presenting to the public my theory on the principles and practice of shoeing horses, I do not enter into a detailed notice on the anatomy of the foot and limb in connection, it is not that I undervalue such fundamental and essential knowledge, but because it is beyond the sphere of my present aim, which is to afford such information as may be intelligible to the largest number of readers.

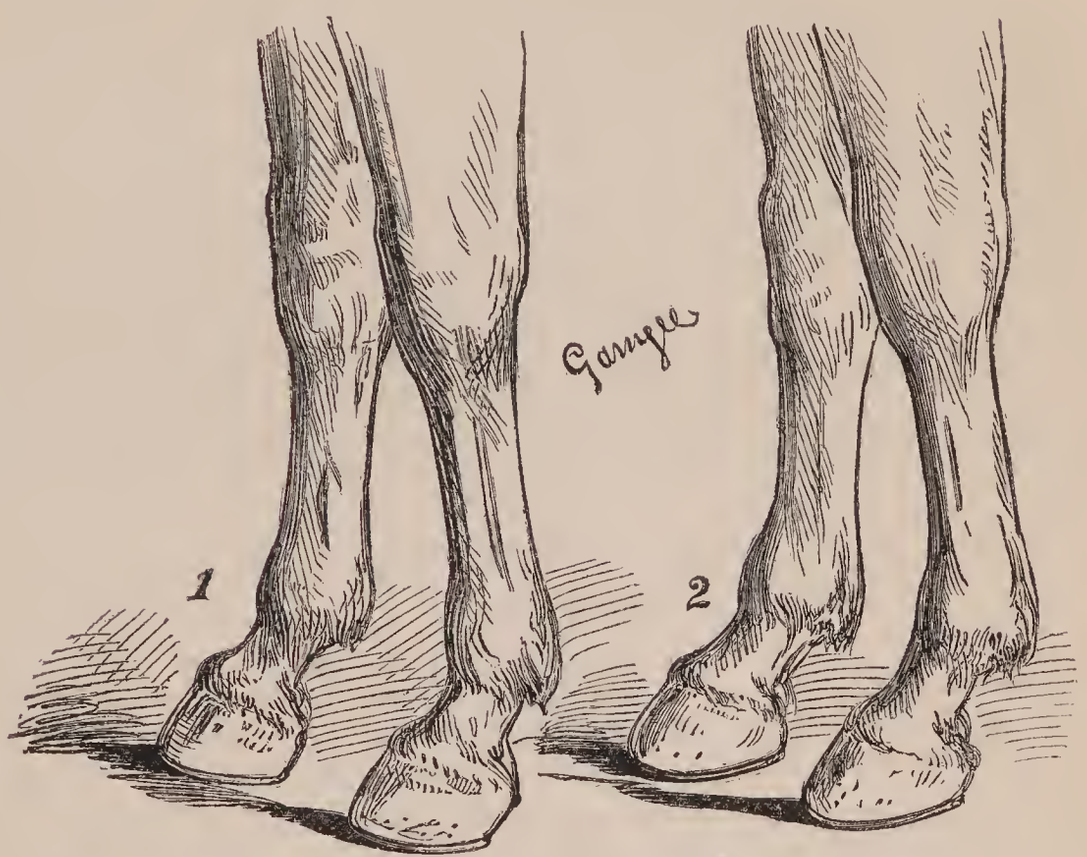
For that reason I shall confine myself to such observations as I deem necessary at present on the structure and functions of the hoof, with such allusions to other parts as may be required to set my subject in a clear light.

The hoof of the horse is composed of three distinct parts, differing in the physical character of the horn, all having assigned to them one common function —that of protecting the exquisitely sensible organs within from injury. Each separately has again its special office; these divisions are nominated the wall, sole, and frog. From what will follow it may be observed, that I lay more stress on the due proportions being given to the wall of the hoof by the practical shoer than is usually done by English writers who have given to the frog, sole, and "bars" the greatest attention; whilst I, no less than they, am aware of the important functions those organs perform in the economy of the foot, still I hold that the wall, forming as it does the framework and the strength of the whole, requires our first consideration, and if that be rightly treated and cared for in shoeing, the other parts, which I shall consider subordinate, are taken care of almost as a matter of course. Lest the preceding sentence should lead to an inference that I am less sensible of the important functions of the sole and frog than preceding writers, I shall be more truthful to myself if I say that I attach a greater importance to the conformation and preservation of the wall in particular than has hitherto been done by English writers and practitioners.

There is a part of the hoof to which I have alluded, called by Coleman and those of his followers who have pursued the subject no further, the "bars," which requires special notice here. The part of the hoof to which that clumsy mechanical name has been applied, has been so admirably described by Mr Bracy Clark, that I can do nothing better than refer the inquirer to his valuable work. What I do say is, that the bars, as described in character and function by Coleman, have no existence; taking the part as Mr Clark describes it, viz., the inflected termination of the wall, giving, as it does, an exquisite finish to that part of the hoof merging into the sole, which together form the boundaries, though separable from the horny frog; thus viewing the wall with its posterior inflections, it forms a part of the highest importance for our consideration. The great question that divides and disturbs the opinion of writers on the foot of the horse, is that of the existence or non-existence of elastic properties. Again, as to the degree of motion and how it takes place. Ill adapted, indeed, have been most of the notions propounded to describe or set at nought this beautiful law of nature. Coleman speaks of the descent of the horny sole as if it equalled that of a carriage-spring. By him and others it has been said that the quarters of the foot dilate at the ground surface about the eighth of an inch every time the animal bears his weight on it. Others, again, say that there is no expansion at all; and yet these same authors, who deny expansion, discuss seriously the evils of contraction. How they reconcile the existence of the one with a denial of the existence of the other, I leave to the reader to determine. Fortunately I shall not have much trouble in proving the elasticity of the horse's foot; what is the amount and kind of movement that takes place, and how such functions can the least be interfered with in the art of shoeing, are the questions to be well considered by every one who may hope to practise the art with success, or in any way engage in the prevention and cure of lameness.

I must defer the further consideration of the functions of the several parts of the foot for the present, and refer to the annexed woodcut, which has been prepared as a help to make my written statement more intelligible. The subject from which the drawings were taken is a five-year-old gelding, measuring sixteen hands and an inch high, bred in the county of Peebles; is an active, powerful horse, cleanly made, with light forehand, adapted for most kinds of harness work; looks like carrying a heavy weight safely, and has excellent feet and legs. I may add that his measurement round girth is six feet two inches; round the arm, one foot eight inches; and below the knee, eight inches and a half. The horse had been shod about a month previous to the drawing being taken, and his feet were in that state indicating a want of re-shoeing. Drawn while in that condition, it will be seen, as shown in fig. 1, that the two fore-feet appear blocky, deep in the heels

and quarters, short and stumpy at the toe, and, as a consequence, are placed somewhat upright in a line with the bones and joints above.



The horse being the property of a dealer, and having had no other exercise of late than that sufficient to preserve health, none of the common inconveniences of feet in such a state were observable. My experience, however, serves to convince me that only another cause was required, viz., fast work, to produce jarring and derangement in the feet and limbs. Having observed the horse in the position in which he stood, whilst the drawing was being taken, I noted the foregoing details. I then had his shoes taken off, and proceeded myself to remove the superfluous horn and to prepare his feet for shoeing. But before doing the latter a cast was taken, and measurements of the hoof made. The same was done after the foot had been prepared. The results of these measurements are seen in the annexed table:—

	BEFORE BEING PREPARED.	AFTER BEING PREPARED.
Greatest breadth of foot	6 inches and 2 lines	6 inches and $\frac{1}{2}$ line.
Length from middle point between heels to toe	5 inches and $5\frac{1}{2}$ lines	6 inches and $\frac{1}{3}$ line.
Depth of front foot	4 inches and $5\frac{1}{2}$ lines	4 inches and $3\frac{1}{3}$ lines.
Depth of inside quarter	3 inches and 7 lines	3 inches and $3\frac{4}{5}$ lines.
Depth of outside quarter	3 inches and $3\frac{1}{3}$ lines	3 inches and $3\frac{1}{3}$ lines.

In the preparation of the foot we have rules for our guidance, to acquire a knowledge of which, however, requires nothing less than to learn the science and art of shoeing, the fundamental and essential step to which is a knowledge of the anatomy and functions of the foot and limb; fixed rules, indeed, we have few, and these the easiest of all to be learned and remembered; but it is the fact that we are dealing with living matter, that makes the art of shoeing differ from other mere mechanical arts, and this difference applies to the foot in what we may call the normal state, that is the state in which the feet of horses are when brought to our forges. Then, again, we have an indefinite variety of deformities and diseases which, while constituting a large part of our surgical practice, shoeing is one of our most important and almost our only agent in the treatment of many of these. Thus it will be seen that it is only the scientific and well-instructed man who can see where and how nature's laws are violated by art; how the

beautifully oblique position of the foot, pasterns, and, in relation, every bone in the limb up to the scapula, are, by a false position given to the bearing surface, thrown out of their natural line. In the case under notice, I began by removing a portion of the wall of the hoof from the ground surface posteriorly; then, by carefully removing the spreading edges of the same externally, which, being weak and out of the line of bearing, formed so much extraneous material. This being done, some flakes of exfoliating sole, which had been imprisoned by the high overlapping of wall at the heels being set free, were detached. Detaching portions of the frog were at the same time cleared away. This in a few seconds being done, I gave to the whole bearing surface of the wall its due form, having regard to depth in all its parts, and the line of gravity in the particular case, leaving the whole in a compact state, no part being weakened by any kind of instrument. In this prepared state a second cast of the near forefoot was taken in plaster. I next proceeded to select new shoes adapted in size, strength, and cover for the horse, making him fit for any kind of work on macadamised roads. In the newly-shod state the second drawing was taken, as shown in fig. 2.

WEIGHT.

Old shoe weighs 25½oz. | New shoe weighs 24¼oz.

MEASUREMENT.

	OLD SHOE.	NEW SHOE.
Thickness at heel	Lines, 4⅔	Lines, 3⅓.
Thickness at quarters	Lines, 4	Lines, 4.
Thickness round toe	Lines, 3¼	Lines, 4.

Before entering more at length on the difference observable before and after shoeing in this case, I may, to facilitate inquiry, allude to cases deviating essentially from the one under consideration, which was selected more as a standard to show the average state than as an example of the great defects. The case is only one of many, and that of a sound young horse, with naturally very good feet and legs. In the ordinary course of daily practice, the next horse presenting would in all probability exhibit defects more in extreme and in opposite ways —low weak heels and quarters, lower on the inner than on the outside half of the foot—or sometimes, though more rarely, *vice versa*—the toe unnaturally long, or appearing so, in its relation to other parts of the hoof: all these augmented by the weakening effect of instruments roughly applied. To these may be added the defects generally accompanying such cases, according to the work the horse has been performing.

Whoever should ride a horse so treated would at once feel the difference in all his paces; it would be, however, in the faster in which the horse would soonest and chiefly suffer. Thus the London dray-horse, and the man who drives him, have alike been deprived, from an early age, through clumsy and ill-adapted shoes, of some of the chief functions of the organs composing their feet; hence the prevention in the development of the limbs. As a consequence of impeded function, the man's legs look hardly big enough to carry his body, and the horse is deprived of much of his agility; neither the one nor the other are necessarily lame, because the pace they move at is not trying enough. Let a horse, however, under the conditions represented in illustration No. 1, be put to fast work, and the effects will soon be apparent. Taking, as an example, a race-horse in training, with his feet ill-proportioned in any of the ways I have described, and some of the several defects usually occurring in that class of horses will be observed, whilst the horse with his feet prepared and shod as represented in fig. 2, will go with ease to himself and safety to his rider, whether he be striding over level ground or on a decline; and even on hard ground he will feel no jar, his legs will not be thickened and hot after his work.

The way in which speed, as well as the mechanical power of the horse in progression, is affected by the state and position given to his feet by artificial means, is another phase belonging to this subject that has not yet been duly considered. I may mention as an example an incident related when discussing the subject

with one of the ablest jockeys of the time of Chifney and Robinson, and though occurring and related some years ago, it none the less bears on the subject now under consideration. My informant was relating the circumstance of his riding the famous horse Lottery, son of Tramp, at the end of that horse's racing career, and whilst running with a mare much inferior to him, Lottery was felt by his jockey as if he could not extend in his stride. Following the little nimble mare, the able Newmarket hand tried by holding his horse together to bring his superior powers out as the race advanced, and on rising ground he managed to get up to her, but the instant the course tilted down hill the mare ran away from him, winning easily. To use the words of the jockey, he felt as if he were steering a blind horse. This is no imaginary case, but one of constant occurrence, as examples within our knowledge prove.

It has been clumsy reasoning from false premises that has assigned to the forelimbs of the horse the limited office of pillars of support, whilst they say that all power of progression is situated in the hind limbs; all nature's laws refute such reasoning. Every part of a perfectly formed animal is symmetrical and in harmony one with another—no more stress being thrown on one limb than on another. This law specially applies to the perfect horse, till the balance is disturbed by injury or by art.

LADY CHESTERFIELD'S PIGS.

To the Editor of the Mark Lane Express.

Sir,—For the last four years the Countess of Chesterfield, Bretby Park, Burton-on-Trent, has exhibited pigs at the Birmingham Cattle Show, and each year taken prizes. This year her ladyship decided to show the pigs exhibited at Birmingham also at the London Smithfield Exhibition, and they were entered accordingly. On their arrival at Birmingham they were examined as to age, &c., by Professor Simonds and Mr Hunt; after which they gained the first prize in their class. The day following the Birmingham Show were again taken to London, and again examined as to age, &c., by the same Professor Simonds, and he there stated that one of the pigs was younger than the other two, and that consequently they could not compete for the prizes, although the judges had selected them for one of the prize pens.

Having had the management of my Lady Chesterfield's farm, I think it my duty to state that the pigs in question were bred on the farm, and there were no other pigs within *months* of their age. The foreman keeps a book, wherein he enters the birth of the animals, and from this book I enter them for the shows; and I am prepared to prove—upon oath, if required—that the pigs exhibited were all of one litter, and their ages properly described in the certificates for entries.

I have had much experience during the last 25 years in breeding, rearing, and fattening of cattle, sheep, and pigs; and my opinion is, that the examination of the mouths of animals is not a safe test as to their age. By being highly fed when young, they will very frequently change their teeth, much sooner than when kept in an ordinary way; and I will venture to observe, that although I think it necessary animals should be subjected to certain examinations, when competing at cattle shows, I think no persons are so competent for this as the gentlemen selected as stewards and judges of the shows, who are men of much experience, integrity, and ability.—I am, &c.,

John Faulkner,
Agent to the Earl of Chesterfield.

Bretby Farm, Dec. 15, 1860.

[We may add, merely to show the consistency of Mr Simonds' conduct, that he objected to these pigs at Birmingham, but that the Council there did not act upon his advice.—Ed. *M. L. E.*]

To the Editor of the Mark Lane Express.

My dear Sir,—My attention has been directed to a letter in your last week's number, from Mr Faulkner, commenting on my report of the age of some pigs, belonging to the Countess of Chesterfield, which were sent for exhibition, and examined by me, at the Birmingham and Smithfield Cattle Shows.

It is very seldom that I deem it necessary to reply to criticisms which are made on the performance of my public duties; nor should I probably do so now, but for the circumstance that, among other things, an error has occurred with reference to the facts of the case, both in your report of the proceedings of the Smithfield Club and also in Mr Faulkner's letter. In the former, it is stated that two of the pigs were above the certified age; and, in the latter, that one "was younger than the other two;" but which, of course, does not necessarily imply that the two were older than they should be.

I am at a loss to understand how these discrepancies could have occurred, and more especially so as my report was made in writing to the stewards of the Smithfield Club, and to the effect that two of the pigs were younger than the other one.

Mr Faulkner lays great stress on the circumstance that these pigs "gained the first prize in their class" at Birmingham, after being examined by Mr Hunt and myself; and this he does evidently to lead the public to conclude that we were satisfied that the age of the pigs was correctly stated. The contrary, however, is the fact; in proof of which, I quote the entry made in my note-book immediately on the examination:—"Pen 155. Age 14 months and 1 week." ["One correct; two younger."]

I may here safely leave this part of the question, as it is clear that our report was not the cause why the pigs gained the first prize in their class.

With reference to the Smithfield Show, I have to remark, that in due course of my investigations, I came to the pigs in pen 306, "age 14 months 7 days,"—"class 42, pigs of any breed above 12 and under 18 months old." I did not identify the animals as having been previously seen by me, nor had I the least idea that they had been exhibited at Birmingham. The first glance at their teeth showed, however, that their age had been incorrectly returned; two being younger than stated. From this I was led to make a very close examination of the molar teeth, as well as the incisors or tushes; and furnished myself for this purpose with an instrument to keep open the mouth. The result I gave, by again quoting from my note-book—["One fourteen months, two ten months."]

From these facts it will be seen, that although Mr Faulkner differs from me with regard to these pigs being all of the same litter, I can agree with him "that there were no other pigs within months of their age," viz., fourteen, bred on the farm.

Mr Faulkner's opinion, founded on twenty-five years' experience, "that the examination of the mouths of animals is not a safe test as to their age," receives very poor support from this case. The animals "being highly fed when young," would here seem to have had a remarkable influence in retarding rather than hastening the cutting of their teeth, so much so, indeed, as to make them appear to be many months younger than they really are. It is a common but an erroneous opinion, that good keeping facilitates the fall of the temporary teeth, and the putting up of the permanent. Such a state of things, however, when existing, is found to depend rather on the wear of the teeth by hard living, than by contrary management; and as such, it is not seen in animals which are prepared for exhibition, by being supplied with cooked food and highly nutritious diet, in the form of milk and meal.—I am, &c.,

James B. Simonds.

Royal Veterinary College, Dec. 20.

To the Editor of the Mark Lane Express.

Sir,—My attention has been drawn to a communication in your last week's impression from Mr Faulkner, relative to an examination of three pigs sent for

exhibition at the Birmingham Cattle Show, by Professor Simonds and *myself*, and the subsequent examination and rejection of the same pigs at the Smithfield Show by Professor Simonds. The object of Mr Faulkner is evidently to lead the public to believe that no remark was made by *us* on the age of the pigs at Birmingham; whereas the contrary is the fact, as we found that two of the animals (not one, as stated by Mr Faulkner) gave satisfactory evidence of the state of their dentition of being *under* 14 months of age, *the correctly named age of the other pig.*

I might here safely leave the matter, so far as I am concerned, but your remarks on the letter are likewise open to an objection, as leading to the inference that the council did not act on our advice. In all matters of this kind it is the *yard stewards, and not the council*, to whom our reports are first made, and which is done verbally, and in time for the judges to proceed on their duties.

In the case in question, these pigs, with others, were reported on, and in consultation it was agreed that they should not be disqualified; hence their successful competition.—I am, &c.,

ROBERT L. HUNT,
Veterinary Inspector and General Referee
to the Birmingham Cattle Show.

Birmingham, Dec. 20.

To the Editor of the Mark Lane Express.

SIR,—Your readers cannot fail to have noticed in your impression of the 17th inst., a letter from Mr Faulkner, the agent to the Earl of Chesterfield, in which he states that Lady Chesterfield "decided to show the pigs exhibited at Birmingham, also at the London Smithfield Exhibition, and they were entered accordingly. On their arrival at Birmingham, they were examimed as to age, &c., by Professor Simonds and Mr Hunt; after which they gained the first prize in their class. The day following the Birmingham Show they were taken to London, and again examined as to age, &c., by the same Professor Simonds, and he there stated that one of the pigs was younger than the other two, and that consequently they could not compete for the prizes, although the judges had selected them for one of the prize pens." Mr Faulkner says he is prepared to prove that his entry is correct, while Professor Simonds boldly maintains that such was not the case, and that two pigs, instead of one, were not of the age entered on the certificate; and his opinion, justly entitled to great consideration, must carry conclusive evidence that Mr Faulkner had probably been misled by the person who keeps the registry-book.

The correspondence is valuable as regards the expression of opinion, relative to the good or indifferent keeping of an animal retarding or advancing its dentition: Mr Faulkner leans to the latter opinion, while the Professor argues strongly in favour of the former.

Having for some years kept a large flock of sheep, and been much interested in observing the effect of food as regards their dental development, I must fully agree with Professor Simonds, that as far as sheep are concerned, "it is an erroneous opinion, that good keeping facilitates the fall of the temporary teeth, and the putting-up of the permanent;" having always observed that lambs put to cut their own turnips through the winter, part much sooner with their sucking teeth, than another lot which have the benefit of a turnip-cutter.

But, Mr Editor, this correspondence seems likely to introduce to our notice a new feature in the management of the Birmingham Show, and one whose hideous aspect, peering from behind the scenes, makes lovers of fair-play and justice stand on their guard, or beat a hasty retreat. Exhibitors are informed in the Prize List, that they must be particular in their entries of stock; that all animals not in every way qualified to compete under existing rules, and especially as to age, will be *dis*-qualified; that proper persons will be provided to perform this onerous duty, and competent men follow them and adjudicate the prizes.

With regard to pigs, pen 155, "Class 31," states that the three animals form-

ing the pen "*shall be of* ONE *litter*," not exceeding 15 months old. They are entered as of one litter; age 14 months 1 week each. On veterinary inspection *one* pig is found to be "of the correct age, the other two considerably younger," showing, no doubt, a wonderful aptitude for early maturity, but clearly evincing that whatever the paternal genealogy may be, they could not possibly claim the same mamma. Pen 155 is consequently objected to "verbally" to the yard-stewards of Bingley Hall; the judges, of course ignorant (I must charitably say) of what constitutes Class 31, give this pen the first prize and silver medal.

Let us for a moment follow the pigs to Smithfield, if we would learn aught, and see how matters stand there. Professor Simonds says, "I came to three pigs, in pen 306, age 14 months 7 days, Class 42, pigs of any breed above 12 and under 18 months old. I did not identify the animals as having been previously seen by me, nor had I the least idea that they had been exhibited at Birmingham. The first glance at their teeth showed, however, that their age had been incorrectly returned, two being younger than stated. From this I was led to make a very close examination of the molar teeth, as well as the incisors and tushes. The result I give: 'one 14 months, two 10 months.'" The report was made *in writing* to the stewards of the Smithfield Club; and the Professor not being engaged to be made a tool of, his word was law, and the pigs declared ineligible for competition.

The Birmingham stewards are, doubtless, obliged to Professor Simonds for saying nothing about them; but his coadjutor, Mr Hunt, steps in, and fully admitting in his letter that the ages of the pigs were at variance, and consequently could not fulfil the conditions required by Class 31, goes on to exonerate the Council, and states, "In all matters of this kind, it is the *yard-stewards* and not the Council, to whom our reports are first made, and which is done verbally, and in time for the judges to proceed with their duties."

What, Mr Editor! after a man like Professor Simonds is engaged to superintend an important and necessary regulation (constituting the sheet-anchor of success, because enforcing honest principle, fair-play, and justice) is he to be called before a quorum of yard-stewards, and verbally asked what he has to find fault with? He says, "Pens of pigs, Nos. 155 and 210, according to the best judgment I possess, are not of the age certified to be necessary for competition in their respective classes."

Then, we hear, there is a consultation—by whose, or by what authority? I wish to know—and pen 155, as Mr Hunt says, "were agreed not to be disqualified." But feeling an example must be made on the subject, they pitch on Mr Sexton, who may probably have the misfortune to be ouly a pound subscriber, and disqualify pen 210.

These things will not long be endured by practical men, who have a livelihood to gain in the pursuit of agriculture; and as these exhibitions are the show-rooms of the breeders of our domesticated stock, they must stand on the merits and truthfulness of the animals they exhibit, and conform to all wise and necessary regulations; but may the day be far distant when exhibitors shall be placed at the mercy and caprice of yard-stewards, who seem at Birmingham to have vested themselves with the power of revoking the decision of one of the best men in his profession.

Bingley Hall will not stand, unless (to use a vulgar expression) things are conducted *on the square;* and will soon be a dead letter when *honestish* usurps the place of *honesty*.—I am, &c., ANTITODI.

Dec. 27.

[The writer of this letter has of course given us his name.—ED. *M. L. E.*]

Leading Article, Mark Lane Express, Dec. 31, 1860.

The age of a woman and the mouth of a horse are proverbially ticklish subjects to deal with. After "a certain age," what with stopping and brushing and bishoping, there is little to depend upon but the Parish Register or the Stud

Book. At a much earlier stage of existence the actual birthright of so distinguished a personage as a Prize Pig promises to become yet more problematical. In fact, until within the last few years, we knew very little about the age of a pig, but took it at once for granted, just as we did the word of a widow who had made up her mind to marry again. "Well, John," said a friend to a successful exhibitor, after the show was over, and the premium paid; "so, you've got the money; but I hear the judges had very serious doubts whether your pigs were not more than the eight months old." "Oh! had they?" answered John, with a sympathetic grunt; "for my part, I'd very serus doubts whether they were'nt more than *eighteen!*"

Thanks, however, to the scientific researches of one gentleman in particular, we have got a little beyond such a state of things, and there is now almost as reliable data as to the age of a pig as to that of a horse. Certainly, two of the most valu able lectures ever delivered, as amongst the most useful papers published, were those given by Professor Simonds under the auspices of the Royal Agricultural Society, on the age of the Ox, the Sheep, and the Pig. Since then we have had more and more to go on, and the Yorkshireman's "serus doubts" would now centre chiefly on his being discovered, in the event of his continuing to practise any of those little pleasantries that he once might have passed off with impunity. Not, though, that any such line-and-rule is as yet quite free from exception. Dame Nature will have her freaks as well as the rest of us, and if occasionally she treats us to a pig with two heads, it is just possible she may send us another with only half his fair allowance of what, in veterinary parlance, is called "mouth."

It would really seem so; if not on the Veterinarian's own showing. On the first day of this month as we write on the last, the Judges and their officers were duly assembled in Bingley Hall to mete out justice to all who should be brought before them. Amongst others were a pen of white pigs and a pen of black, both of which the veterinary surgeons declared were not of the age certified in the entry—two of the animals, in the one instance, being under that given, and the other lot over; while one of the main conditions was that the pens shown should all be of the same litter. The conduct of the Stewards, or the Judges, or the Council, or with whomsoever the matter rests, was, to say the least of it, extraordinary. They adopt the report of the Veterinary Inspectors in one case, but refuse it in the other. They reject simple Mr Sexton; but, as Mr Hunt advises us, "in consultation it was agreed that they (the other pen) should not be disqualified." Now, what can this possibly mean? If the Birmingham Society is to credit its own chosen officers in one instance, why not in the other? And in this "other," the Inspectors report that in three pigs entered as of one litter, two were under the age specified. And who were "in consultation?" Did the whole Committee assemble, and discreetly decide that it would not "do" to throw out one condemned lot, although they might very safely carry out the sentence on the other? There is no disguising the matter but that the management of the Birmingham Show is coming to be "talked about." There are said to be far too many people in the Hall when the Judges are at work, with Committee-men and Catalogues, and yet more interested people "in the way." Admitting that Mr Faulkner is right, and the Inspectors are wrong, how could the Stewards of the Yard get over this case without further inquiry? Or, are the rules and regulations of the Society only to be made applicable to common people, and not to Lords and Ladies of higher degree?

But there might have been extenuating circumstances: the proof might not have been very decisive, and the two veterinarians might not have quite agreed among themselves. On the contrary, we find them altogether unanimous in support of each other's opinion. Further than this, the same pen comes on to Smithfield, when the same Professor Simonds again examines them, and again condemns them on precisely the same showing, as one older than the other two. In doing so, he declares that he did not recognise them as being the pigs which he had out in the week previous. The corroboration afforded here is extraordinary; it has, indeed, never been stronger. Mr Faulkner, however, as the agent of Lord

Chesterfield, is ready to contradict such proof upon oath; whether directly from his own actual knowledge, or that of his pigman, is not as yet quite clear. We were present when he was called before the meeting on the Thursday, in the show-yard, and our impression was that the onus would lie more with the man in continual charge of the animals than with his master or overlooker. If, however, we remember rightly, Mr Faulkner then stated that they had no other pigs within four months of the age of those entered; and four months, it will be found, is the precise difference in age that Mr Simonds put them at. We should be the last to doubt Mr Faulkner's own word or belief, and in the absence of the Professor, the meeting went a great deal with him. Still there are strong points rising on the other side, and his own argument in reality only tells against him. In place of high feeding and early maturity developing the mouths of his pigs, it has had the effect of making two of them pass for four months younger than they actually are. Mr Faulkner, though not considering the teeth a safe test of age, still "thinks it necessary that animals should be subjected to certain examinations when competing at cattle shows," an opinion in which we quite agree with him. But he goes on to say, that "no persons are so competent for this as the stewards and judges;" at which point we shall at once join issue. We believe, on the contrary, that neither stewards nor judges would now be quite safe without the services of an efficient veterinary surgeon, and that, in fact, it would be altogether indiscreet to venture on disqualification without the support of a professional opinion. We are very sure that not one judge in a hundred would take such a responsibility upon himself. We are willing to believe that this may be an exceptional case; but even if proved to be so, we are by no means inclined to dispute the generally reliable character of the data gone upon, or to ignore the system. We regretted, indeed, to see so old a member and so good a man as Mr Stokes giving notice of a motion tending to this effect—if not to abolish, at least to qualify the present plan of rigid examination, and to bring the Club back to "as you were." Flying in the face of the authority which science can furnish us with is just the worst possible step that honest men can take, however kindly their intentions. At the Chepstow Club meeting, the other day, two defeated exhibitors objected to Mr Henry Higgins' Hereford yearlings, admitting that their mouths were right, but that they were too well grown for their stated age. Of course, on going into the case, the objection at once fell through, and the doubtful compliment at first paid to the Woolaston stock was more satisfactorily confirmed.

The world will look for a full report of what the Stewards of the Smithfield Club will do over the case of these disqualified pigs; while some explanation is still more required, or rather imperatively demanded of the Birmingham authorities.

To the Editor of the Mark Lane Express.

Sir,—The Council of the Birmingham Cattle Show have had their attention directed to two letters which appeared in the *Mark Lane Express* of the 24th of December last, the first from Professor Simonds, and the second from Mr R. L. Hunt, having reference to a pen of Pigs (No. 155) in the late Exhibition in Bingley Hall, and in both of which statements are made to the effect that the Stewards of the yard refused to act upon a report from those gentlemen, setting forth that the certificate of entry of the pigs in question was incorrect, and consequently, by the rules of the Society, they should be disqualified, the three not being of one litter; and that such Stewards allowed the pigs to remain in competition.

As it has been the invariable practice at the Birmingham Shows to leave unconditionally in the hands of the Referees the power of disqualifying Stock on account of age, (Professor Simonds and Mr Hunt having officiated in that capacity in Bingley Hall for the last eight years,) the Council instituted an inquiry into the charges made by them in your columns, special meetings having been held or the purpose.

At these meetings Mr Hunt was in attendance, and several letters were read from Professor Simonds (who was also invited to attend), the evidence of the Stewards of the yard being also taken; and, as the result of a most careful investigation, I am instructed by the Council to state that they are perfectly satisfied no report whatever, either verbally or in writing, was made by the Referees to the Stewards of the yard, or to any other person, respecting the pigs in pen No. 155.

The Stewards of the yard, and every member of the Council who took an active part in the management of the Exhibition, unhesitatingly assert that they were not aware of any doubts being entertained as to the correctness of the entry of pen 155 until the publication of the *Mark Lane Express* of the 24th December, after the same pigs had been disqualified at the Show of the Smithfield Club. The only report given in by the Referees at the last Exhibition in Birmingham related to a pen of breeding pigs, which they (the Referees) disqualified in writing in the usual manner—that is, on their own responsibility, and without consultation or reference to any persons.

It should be further explained that the Stewards do not accompany the Referees, but are engaged in other parts of the building while the examination of the animals is being made; and when the Referees decide that an entry is incorrect, the card, "Disqualified on account of Age," is at once put up in the pen on their sole authority, without any communication on the subject being made either to the Stewards or members of the Council.

In publishing this refutation the Council are performing a painful duty, and they have delayed as long as possible any public notice of the subject, in the hope that Professor Simonds and Mr Hunt would have withdrawn their statements, and explained their reasons for not disqualifying a pen of pigs of the incorrectness of the entry of which they appear to be satisfied. This, however, has not been done, and it is absolutely necessary that an emphatic denial should be given to allegations so seriously affecting the integrity of the management of the Birmingham Exhibitions.

I am also instructed to call your attention to the fact that the Birmingham Society was the first to establish that systematic veterinary inspection required to test the accuracy of the entries with regard to age, which is now adopted at the Exhibitions of the Royal Agricultural Society, the Smithfield Club, and at some of the leading provincial meetings. It has also, from the commencement of the Birmingham Shows, been a clear and well understood regulation, that *all* questions of a practical nature should be left to the uncontrolled decision of the Referees and Judges, there being no second tribunal to which an appeal can be made.

The regulations under which the Exhibitions are held have been framed with as much care as possible, with the advice and assistance of experienced men, and all that could be required from the Council—the majority of those taking an active part in the management not being engaged in agriculture—was, that having for their guidance rules based upon sound principles, they should take all possible care that these rules were properly enforced, and select men of high character and position as their Judges and Referees. The continued success of the Show may be fairly considered as a satisfactory proof that the Council have done this, and that they possess the entire confidence of the exhibitors; and they hope, therefore, that Professor Simonds and Mr Hunt will explain statements which appear to imply that the inspection of stock in Bingley Hall by the Referees, in order to test the accuracy of the entries as regards age, has for so many years been worse than a farce,—their reports having been adopted or rejected at the caprice of persons possessing no knowledge on such subjects.

It is no doubt known to many of your readers that ten years ago Professor Simonds (for whose professional attainments and experience the Council entertain the highest consideration) was induced, partly from circumstances which occurred at one of the Birmingham Exhibitions, to devote great attention to the study of the dentition of animals as a test of age; and so soon as he was prepared to show that such examinations might be fully relied upon, the Council availed

themselves of his professional assistance, and that with the entire concurrence of exhibitors who would have objected to the decisions of a non-professional Referee being taken as conclusive.—I am, &c.,

JOHN B. LYTHALL, Secretary.

Birmingham, January 17, 1861.

[The following are the rejoinders to the statement of the Council of the Cattle Show]:—

To the Editor of the Mark Lane Express.

MY DEAR SIR,—In your impression of last week I find a letter from Mr Lythall, Secretary to the Birmingham Cattle Club, written by the direction of the Council, which places the *non*-disqualification of the pigs belonging to the Countess of Chesterfield in an entirely new position, and one which obliges me to take other means than those of meeting assertions with counter-assertions, to guard my reputation.

At present I refrain from commenting on this extraordinary communication, or giving any other reply to the statements therein made.—I am, &c.,

JAMES B. SIMONDS.

Royal Veterinary College, London, January 25.

To the Editor of the Mark Lane Express.

SIR,—The correspondence upon the question of the Countess of Chesterfield's pigs now assumes one of *veracity;* the stewards of the Birmingham Cattle Show making one assertion, and the veterinary referees another; and here it seems doomed to remain. One circumstance occurred, however, at one of the meetings of the Council, which I was desired to attend, whilst this matter was under consideration, that may add a little force to our statements, and that was a remark from the stewards that no application or communication whatever had been made to them respecting *any pigs at all* until after the decision of the judges, when the propriety of altering the age of one of the classes of pigs was suggested by Professor Simonds. I at the time ventured to remind one of the gentlemen of the fact of his being applied to in the case of a pen of young Berkshires, and that he came and directed us how to proceed.

It matters not whether his instructions in this case were right or wrong—but wrong they decidedly were—as I merely quote it to suggest that as his memory was defective in this case, whether it is not equally possible that it might be so in the other, whilst busily occupied in the Hall on other matters?—I am, &c.,

ROBERT L. HUNT.

Annales de Médecine Véterinaire. Jan. to April, 1860.

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V.—CARBUNCULAR FEVER IN THE HORSE. FOUR CASES CURED BY THE USE OF PHOSPHURETED OIL. By M. GUILMOT, Government Veterinary Surgeon at Havelange.

At a previous meeting of the Belgian Veterinary Medical Society, M. Hasson having strongly opposed the statement of Professor Delwart, that cures had been effected by the use of phosphureted oil, contending that the result was not owing to the use of these oils alone, but to the other agents with which they are combined, M. Guilmot was led to publish these four cases as condemnatory of M. Husson's opinion. The first case was that of an eight-year-old gelding, which had been largely bled before M. Guilmot's arrival. The blood had a repulsive odour, and was not coagulated. The other signs indicated anthrax. They consisted in circumscribed, painful, crepitating swellings on the limbs, the inferior of the abdo-

men and thorax, and on the withers. On some parts there was an exudation of very dark blood. The visible mucous membranes were covered with petechiæ, and there was painful swelling of the intermaxillary lymphatic glands. From the right nostril there is a flow of a reddish liquid, with a very unpleasant odour.

The treatment consisted in the administration of 40 drops of phosphureted oil, producing in half-an-hour profuse diaphoresis, which was kept up by warm clothing and occasional doses of the phosphureted oil. Nourishing food was at the same time prescribed. On the sixth day the engorgements had all but disappeared, the nasal discharge and the petechiæ were gone. The medicine was now discontinued. Two days later the swellings had altogether vanished, and the animal soon returned to its work.

The second case exhibited symptoms similar in character to the last, but of much greater severity. In this case no amelioration took place for the first eight days, the medicine having been given in 30 drop doses. The dose was then increased to 40 drops, which were given four times in succession with intervals of an hour. This led to the most copious perspiration, a marked diminution of the inflammatory engorgements, and general symptoms of improvement. The medicine was continued for two days longer, when every symptom being largely relieved, it was withheld. In seven days more all trace of the malady had disappeared.

The third case was of a milder character, though still grave and attended by well-marked symptoms. In this case the use of the oil for three days, in doses of 25 drops, led to an improvement of so extensive a nature that the agent was suspended. This animal returned to its accustomed regimen on the thirteenth day.

The fourth case terminated in a manner equally satisfactory. It took at the first dose 50 drops of the phosphureted oil, and in the course of twelve days took in all 180 drops.

From the experience of these cases, M. Guilmot hesitates not to asssert that the use of phosphureted oil is capable of leading this malady to a happy termination, even when its action is assisted by no other remedial measure.

The following rules are laid down in reference to the treatment of the animal:—

1*st.* It must be separated from others.

2*d.* It must be placed in a free airy box.

3*d.* The cloths used for covering it must be disinfected.

4*th.* The person administering the agent should cover his hands with oil, or some other fatty body, before proceeding to administer it.

The therapeutic action of the oil is, in M. Guilmot's opinion, either by a specific operation on the anthrax poison, or, more probably, by assisting in the elimination of this poison through the medium of the skin.

He further concludes, that in order to produce a curative effect, the agent must be given in sufficiently large doses,—proportioned of course to the severity of the attack,—and that its administration must be persisted in until beneficial results are observed. It is a heroic method of cure, and if timidly or cautiously employed, will fail in the majority of cases.

Under the action of the agent the most prominent symptom beside diaphoresis, is the loss of appetite, and the intense thirst: these effects are accounted for by the constant action on the stomach of such an energetic excitant as this agent. By the use of farinaceous draughts, *ad libitum*, these symptoms generaly disappeared in the course of three days.

VI.—Fistula of the Temporal Region, caused by the Pressure of one or several Molar Teeth abnormally developed in front of the Ear. By M. Macrops, Veterinary Surgeon at Huy.

M. Macrops has operated on numerous cases of this nature with a happy result. They consist in the development of a dental tumour in the substance of the temporal bone, in front of the ear: leading to the establishing of a fistula, discharging a greyish pus, possessed of a disagreeable odour. The fistula is commonly

straight, and opens in the midst of a slight tumour, covered by skin of a hard and warty structure. The animal eats slowly and with difficulty, it is in consequence in a lean and unthrifty condition.

The last case of M. Macrops which is recorded at length, had been previously treated by three veterinary surgeons without success, and was about to be slaughtered as incurable when it fell into his hands.

After securing the animal properly, a crucial incision was made over the tumour, and the skin raised from the osseous parietes, to which it was firmly adherent. The outer plate of the cranium was then found to be attenuated by the pressure of the foreign body. By means of pincers and a knife a sufficient amount of this was removed to allow of the introduction of a crowbar beside the dental tumour. By this instrument torsion was effected on the tumour in different directions, always avoiding any measure calculated to cause pressure on the brain, and, after some difficulty, the offending body was removed, leaving a deep cavity with smooth edges.

M. Macrops has always found these fistulæ dependent on a similar cause, and in all the cases operated on by him, the crown of the tooth has been turned towards the cranium.

Out of fourteen horses on which the same operation was performed, thirteen were completely cured in the course of from ten to fifteen days. The fourteenth was twice operated on, with an interval of three months, and at each operation a similar tumour was extracted. After the second operation there still remains a soft, incysted tumour, of the size of a small egg, from the inner surface of which is secreted a transparent albuminous fluid. When the tumour is full, the liquid escapes by a very delicate canal, opening opposite the middle of the ear. All means resorted to for the cure of this cyst have failed,—the injection of tincture of iodine, the application of the hot iron to its inner surface, and the passage of a seton through it, have been equally ineffectual. M. Macrops is accordingly of opinion that in this case a third tumour of a similar kind is in progress of formation.

A remarkable feature in these cases is, that the subjects are all young animals, and during the period of dentition. This can easily be understood; another circumstance, however, is not so easily explained, the tumours have all been on the right side. This, if possessed of no definite cause, must be looked on as at least a remarkable coincidence.

M. Macrops has also found them invariably directed upward toward the poll, so that he looks on them as resulting from a sort of reversing of the embryo tooth.

In the April number of this Journal there is a description of a similar case, operated on by M. Tyvaert, Government Veterinary Surgeon at Mechlin. His subject was eight months old, and had been treated for three months by an empiric without effect. In this case there was a fluctuating tumour, containing a quantity of a whitish liquid, on the opening of which the dental tumour was diluted. In this case the tumour was first loosened by the use of a hammer, and *rogne pied*, after which it was easily extracted by strong pincers. The walls of the sinus were then cauterised with a hot iron, and speedily healed up.

VII.—Lactorrhœa, or Discharge of Milk. By M. Andre, Government Veterinary Surgeon at Fleurs.

The loss of milk in the cow being a very frequent accident, M. Andre, in the paper before us, considers in a concise manner the common causes, and the remedial measures to be adopted in such cases.

Leaving out of view the spontaneous discharge of milk that depends on an engorgement of the galactophorous sinuses, under the pressure of which the sphincter gives way, our author directs attention to two abnormal conditions on which a spontaneous flow of milk depends: 1st, It may take place from an opening, congenital or traumatic, which leads into the sinus at a point above the situation of the sphincter. In this case the secretion is discharged as soon as formed. This is treated by the application of a pointed hot iron, around and into the arti-

ficial opening, at the time when the secretion of milk is arrested,—usually about five or six weeks before parturition. 2ndly, Without an abnormal opening, the sphincter sometimes becomes relaxed or paralysed, so that the secretion will flow, first in drops, and afterwards in a free stream, as soon as a small amount collects in the galactophorous sinus. In this case, an iron or copper ring, or, what is still better, an elastic cord, is to be applied on the affected teat, close up to the udder, so as to be above the sphincter. That structure is by this means relieved of the pressure of the milk, which tends to keep up its abnormal condition. The ring should only be taken off at the moment of milking, and should be immediately re-applied on that operation being concluded. No danger is incurred of the ring shifting down, as a short time after its application a certain amount of swelling takes place in the part of the teat beneath it, which effectually retains it in its place.

The mechanical opposition afforded by this means to the escape of milk, and the state of physiological congestion induced, leads to several modifications of the teat, and especially to the overcoming of the relaxed condition of the sphincter, and to the retention of the milk.

VIII.—Simple, Complete, and Articular Fracture of the Superior Part of the Left Metacarpal Bone in the Horse. By M. Stievmairt, Veterinary Surgeon at Racour.

This is an account of a somewhat unpromising case, inasmuch as the fracture extended from the middle of the diaphysis, in an oblique direction, into the lower joint of the carpus. An immoveable bandage, designed by Professor Delwart, was applied, and the animal placed in slings. At the end of four weeks the chafing and engorgement of the inferior of the chest and abdomen was so great, that the patient had to be taken from the slings. At the end of the sixth week the bandage was removed, but union was found to be imperfect, and there existed inflammatory engorgement of the carpus and metacarpus: this was reduced by the application of emollient cataplasms for five days, after which an immoveable bandage was again applied, on the removal of which, at the end of the eleventh week, union was found complete, there being left only a slight engorgement and a trivial lameness, both of which now gradually improved under the influence of moderate exercise.

IX.—Case of Cerebral Disease in a Colt.

This is an interesting case, by the same author, in which the patient, having been noticed ill the previous day, was found in the morning turning round continually to the right side, precisely as in the case of a sheep affected by sturdy. He exhibited increased heat and sensibility in the anterior cranial region, with a tense and accelerated pulse, eyes nearly closed, visible mucous membranes injected, mouth hot and clammy, with obstinate constipation.

The colt died on the seventh day of illness, in spite of active treatment, and the olfactory lobe and the corpus striatum on the right side were found to have undergone a softening change, having the general appearance of a mass of pus.

X.—Chronic Hernia of the Reticulum through the Diaphragm. By M. Cartin, Veterinary Surgeon at Maurs-Sainte-Marie.

The subject of this affection—a cow of six years old—exhibited, along with the symptoms of debility, a certain difficulty and peculiarity in respiration. The general symptoms were emaciation, and great dejection, with a rough staring coat, thick harsh skin, infiltrated and yellowish conjunctiva, regular but feeble pulse, pain and dullness on percussion of the right side. Ausultation showed a normal action of the heart, but a peculiarity on the respiratory murmur on the left side. This was found loudest at the anterior of the chest; in the upper third, too, it was well marked, in the middle third its intensity was much less intense, while in the lower third of the thorax it was completely absent. The right side was normal. There was no cough or abnormal odor of the breath. The respira-

tions were regular, but attended by a peculiar undulating motion of the flanks, and especially on the left.

Our author was unable to diagnose the disease, and treated it for eighteen days as *fardelbound*, complicated with an old standing affection of the chest. During all this time the appetite was greatly impaired, ruminations almost completely suspended, the secretion of milk arrested, and an obstinate constipation.

The *post mortem* examination showed great disorganization and induration of the liver,—its substance being interspersed with small abscesses, containing pus of a white, thick character: a part of the organ was gangrenous, breaking down into a putrid mass under the least pressure. While this accounted for the death of the animal, the peculiarity of the respiration was accounted for by the discovery of a large rupture in the left side of the diaphragm, through which the reticulum had passed into the thoracic cavity, displacing the left lung, having at the same time contracted an attachment by its inferior part to the pulmonary pleura, and by its superior part to the pericardium. The heart and lungs were healthy, and the margins of the diaphragmatic rupture were smooth and completely cicatrised.

This animal had been six months previously under treatment, by another veterinary surgeon, for an affection of the chest, and that gentleman remarked the peculiar character of the respiratory murmur after the cure had been effected.

XI.—Report concerning a Parasitic Malady in the Horse: Addressed to the Governor of Namur. By MM. Duviensart, Cambron, and Guilmot, Government Veterinary Surgeons.

This is a report concerning several cases of gastritis, supposed to be brought on by the pressure of bots in the stomach. These cases occurred in the middle of January, consequently a considerable time before the bots would be naturally discharged. In the animals affected, a fatal result ensued in a remarkably short space of time, four horses dying on the first day of the attack, and other two more some days later, after having been treated by vermifuge medicines, consisting of tansy, male wild fern, and camphor. The general symptoms were those of gastritis, complicated in certain cases by cerebral disorder. The *post mortem* examination of those that died, showed the presence of a large number of bots, with inflammation of the mucous membrane of the stomach, and softening of the tissues. In certain cases, there was effusion on the brain, with injection of its meninges.

The other horses, belonging to the same agriculturist—eleven in all—soon became similarly affected, while eight young colts that had passed the summer in the stable remained in a state of perfect health: one colt, however, which had been some time at grass, was affected in the same way as the horses.

In consequence of the inflammation of the stomach, which complicated the malady, less irritating anthelmintics were now had resort to. Sulphuric ether, wood tar, and infusion of absinthium were now administered, and a diet more or less restricted, according to the state of the digestive organs, enjoined. After six days of this treatment, one of the horses died; and the larvæ were found to have been dislodged from the stomach; their former presence was easily ascertained by the large quantity of minute cells, or honey-comb-like depressions on the mucous membrane. These cells, doubtless the result of the hooks of the larvæ, existed in large amount on the inflamed portions, as many as 126 having been counted on such portions.

At the time of this animal's death, the others were all promising favourably toward recovery, and with careful dieting were soon in a state of perfect health.

As a prophylactic measure, in animals subjected to the attacks of the *oestrus equi*, it is recommended that the extremities of the hair on the limbs, on which these animals deposit their ova, be removed by means of scissors, or by the flame of spirits of wine.

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AND

Annals of Comparative Pathology.

ORIGINAL COMMUNICATIONS AND CASES.

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The Charter of the Royal College of Veterinary Surgeons: Its Capabilities and Defects. By a MEMBER of the FACULTY OF ADVOCATES.

IT would be utterly useless, at this time of day, to comment upon the difference between a commercial monopoly, however constituted, and the charter incorporating a professional body. Suffice it to observe that, in the one case, the private advantage of the individual or company is regarded; in the other, social privileges are accorded for the public good. That individual exertion is, in the latter case, encouraged, and talent attracted into productive fields, is no doubt true, but it is equally true that this is primarily, ultimately, and manifestly for the benefit of society at large.

Upon this principle, and for this object, a charter was granted to veterinary practitioners in this country in 1844, erecting them into a corporate body, and conferring upon them the *status* of professional gentlemen. A glance at this charter will satisfy any one that it is conceived in the spirit of the most advanced policy. It grants no protection but such as is necessary for the public good—such only as is deemed requisite in all other professions, not merely in those in which life or death are in the hands of the practitioner. It imposes no restriction on healthy competition. It empowers a body of qualified and independent examiners to confer a *status* on professors of this department of the healing art, after that body has been satisfied that the applicant is able to analyse the phenomena of disease, to trace them to their accredited cause, and to prescribe a remedy. It thus provides a medium for the detection *in limine* of insufficient capacity or defective information, interposing at once for the encouragement of merit and the protection of society from quackery and imposture.

We wish to direct the attention of our readers to the matter of this charter—the powers and privileges it confers—and the mode of applying these powers and privileges to the improvement of the condition of the profession. We shall advert to what it meant to confer, but, *per incuriam*, has omitted. We shall also refer to the procedure requisite to remedy that omission, and to secure the benefit of whatever else may be fairly demanded in accordance with the spirit of the grant.

In its narrative, the charter comments upon the objects and utility of veterinary science, and of the liabilities and disabilities to which its practitioners are exposed. It specially narrates that they are "so fully occupied in the discharge of the duties of their profession, and so continually at the call of the public, as to be very ill qualified to discharge, with due regard to the interests of the public, the parochial and other services which the law enforces on them, and that considerable advantages would accrue to our subjects generally by enabling our petitioners and others constituting the body of veterinary surgeons, to possess privileges from which they have been hitherto excluded." Upon this preamble, it created and constituted the Royal College of Veterinary Surgeons—declared that all who then held certificates of qualification to practise as such, and any who might afterwards obtain them from a veterinary college, should be members of this Royal College, provided they passed such an examination as might be required by its rules and bye-laws—erected the professors of veterinary art into a faculty—and provided that its members, in the sense already specified, should, "solely and exclusively of all other persons whomsoever, be deemed and taken and recognised to be members of the said profession and professors of the said art, and individually known and distinguished by the name or title of veterinary surgeons." Such is, in effect, the clause of constitution, and it is much to be regretted that, by an obvious omission, the disability now attaching to the profession of compulsory attendance on parochial duties, should not have been removed. It was manifestly intended it should have been so, but, like too many good intentions, it must have escaped during the interval between the determination to perform and the actual performance. We shall state in the sequel the course now competent for obtaining the correction of this oversight.

The profession and its members being thus constituted, the charter goes on to provide for the proper management of its affairs. To this end a council, with its usual presiding and administrating functionaries, is created and authorized to be elected by the suffrages of the general body. To this council the entire management of the college is confided. It is empowered to make bye-laws for fixing, *inter alia*, the times and places of its own meetings—the times and places and manner of examining students, who shall have been educated at any existing veterinary college, desirous of acquiring the *status* of veterinary practitioners—the matter of such examinations—the persons to examine (professors being expressly excluded)—and the fees payable by applicants for such examinations. It is also empowered generally, to legislate "touching all other matters relating to and connected with the said body politic and corporate; and the same orders, rules, and bye-laws, from time to time, to alter, suspend, or repeal; and to make new orders, rules, and bye-laws in their stead; as the council shall think most proper and expedient, provided they be not repugnant to these presents, or the laws of this our realm." About the import and value of these privileges, mistake is impossible. It

must be apparent that the Council of the Royal College of Veterinary Surgeons are a board of general direction for the entire profession in each of the three kingdoms—that those they appoint to examine are alone competent to declare the fitness of an applicant for the reception of a diploma and the occupancy of a professional *status*—that without this *status* none are entitled to practise as veterinary surgeons within the territory specified. It is further apparent that this Council may meet when and where they choose—that they might therefore hold a general meeting in the capitals of the Three Kingdoms in rotation. It is clear that they may appoint resident boards of examiners wherever they deem such to be required for the advantage or convenience of the profession, and also that they may appoint procurators-fiscal to watch over and vindicate the rights of the profession as conferred by the charter.

It is hardly necessary to remark that many of these rights, doubtless from inadvertency, have been left unexercised, and that the co-relative duties they imply have been, consequently, unperformed. We cannot doubt that, when the fact is brought under the notice of the Council, vested as it is with these large powers for the general benefit of the realm, it will at once proceed to make such arrangements as will secure to the public and the profession the full advantage of these provisions. The necessity for immediate and active interference is urgent. In Scotland (as we have formerly shown in this Journal) the rights and privileges of the Royal College have been invaded, to its own large pecuniary loss, and the great detriment of those who have obeyed its laws and obtained the certificate of its examiners. The Highland Society's certificate is a palpable infringement of chartered rights, exposing both the granters and receivers to the risk of an action, and conferring no title to practise as veterinary surgeons. The history of this certificate is somewhat remarkable. The earlier efforts in Scotland to establish a veterinary school were naturally seconded by all agricultural bodies, and amongst others, by the Highland Society. Eventually it not only patronized the teacher, but appointed parties to interrogate the students and to certify the efficiency of such as approved themselves, in their estimation, capable of practising. In 1828, the Edinburgh College assumed a position of fair rivalry to the London institution. In 1838, an arrangement was effected by his Grace the President of the Highland Society, the War Office, and the Board of Control, whereby the students of the Edinburgh College received the same privileges at the Horse Guards as those formerly and exclusively enjoyed by the London students. Shortly afterwards the agitation for a charter of incorporation commenced, and, ultimately, the movement was joined by Professor Dick. At his requisition, as appears from the first page of the charter, that charter was granted—the college at Edinburgh was placed on the same footing, as an educational institution, as the college at London, and subjected, of course, to the disability of having its students certificated by the examiners appointed by the General Council before

they were entitled to practise. With this arrangement Mr Dick was perfectly satisfied until the appointment of a Board of Examiners was made by the Council of the Royal College. A dispute arose, and was continued for some time with an amount of acerbity and personality which was anything but creditable to the disputants, and which is unhappily too often characteristic of medical quarrels. Ultimately Mr Dick renounced his allegiance to the Council, and, in his own independent way, appointed a separate board. Unfortunately, the Highland Society erred with him, and, in complete ignorance of the advantages conferred on the profession by the Deed of Incorporation, supported a personal difference, to the great detriment of the interests of the general body. The Council of the Royal College acted with forbearance, and refrained from insisting upon their chartered rights. In due time, however, Mr Dick's students were refused admission to the army; but, after the use of some secret influence at the Horse Guards, this privilege was temporarily restored. Here again the Royal College displayed its moderation and tacitly acquiesced. It must be perfectly clear, however, that while the Charter of the Royal College subsists, this permission must be held to be an unwarrantable infringement of vested rights, and, in any event, it confers no exemption beyond the small circle of army veterinary surgeons. But if it is incompetent to the War Office to act as it has done, as we trust will shortly be discovered, much more must it be so to Mr Dick and the Highland Society. The latter influential body has no power whatever to meddle with veterinary institutions. There is no clause in its charter containing either an obvious or implied title to do so—no authority is conferred upon it therein to appoint a board of examiners—none to issue a diploma. The assumption involved in the mere constitution of such a board might carry the Society any length. It might create a board of shoemakers, bakers, or chimney-sweepers, if it thought fit, to certify the sufficiency of veterinary practitioners, and, in the utter absence of all appearance of responsibility, deride interference and defy redress. It might as well assume a power of granting a degree of M.D., D.D., D.C.L., or LL.B., as a veterinary diploma. That is expressly restricted by Charter to the examiners appointed by the Council of the Royal College of Veterinary Surgeons, and, therefore, unless the present unwarrantable infringements of these prerogatives cease, it will be necessary for those who have the true interest of the profession at heart, to move for the adoption of measures to terminate them. Ignorance cannot in future be pleaded, and those who consciously defy the law, will have themselves to blame for the consequences.

Meanwhile, in furtherance of our design, we shall proceed to submit a few suggestions, calculated, in our estimation, to improve the condition of the profession, and to secure implement of its chartered rights. We shall also endeavour to indicate what remains to be done by the Legislature for the completion of these rights.

Upon the first point, it may be remarked that whatever is requisite

can be accomplished by the corporation itself, acting in virtue of the power conferred upon its Council to make such regulations or bye-laws as are deemed conducive to the attainment of the end for which it was organized. And here by far the most important question emerging for consideration, has reference to the means of vindicating the exclusive privileges guaranteed by the charter. Certain rights and privileges are given. How are they to be made available? No specific mode is pointed out in the document itself. But this may or may not be an omission of the framer. Certain it is that the benefits granted were meant to be a reality, and that, without some compulsitor or means of enforcement, they could have been no better than a sham. Doubtless the charter might have been so constructed, that a penalty was attached, by way of direct sanction, to the breach of any of its provisions. But that is not the usual form, and we are rather disposed to think that it was considered better to allow the Council to arrange that matter for themselves, under the general power of administration conferred upon them—more especially as the charter was uniting two bodies at the two extremes of the kingdom.

That these rights are not only open to invasion, but have been invaded, is, unhappily, too clear from the previous narrative, and that the *onus* of protecting them lies upon the Council, is equally clear. They take the entrance fees from every graduate, upon the implied condition that he is to have the full benefit of the chartered rights of which they are the possessors, distributors, conservators, and protectors; and it humbly appears to us that they are bound to take measures for the suppression of every manifest infringement of these rights, about which complaint has been regularly made to them. Yet here, doubtless by an oversight, nothing has been done. The members have been left to guard their interests as best they might, and have been unfairly subjected to the competition of uncertified, or improperly certified skill. This state of things calls loudly for amendment, operating as it does, and necessarily must do, not only to the detriment of the legal practitioner, but to the injury and degradation of the profession at large. The power is in the hands of the Royal College. The machinery required is of the simplest possible description. The circumstances of the body imperatively demand that it should be immediately called into existence.

To this end our suggestion is, as already hinted, that a procurator-fiscal, or representative guardian of these valuable rights, should be appointed along with the other officials of the corporation, at its annual election, with full power to apply to the judge-ordinary of the territory in which the provisions of the charter or rights of the members of the body have been violated, for protection or reparation, as the case might demand. Of course, as the courts, systems of jurisprudence, and forms of procedure in Scotland and England are not only different and distinct, but, in many points, contrasted, it would obviously be necessary to have such a functionary in each of the countries. They would require to be armed with power to proceed, by way of inter-

proportion, be diminished. The enhancement of the respectability of dict or action, in the name of the General Council, and, conversely, it would be necessary, or at all events expedient, that the corporation should hold itself amenable, through their medium, to the jurisdiction of the courts of the two countries. This would speedily terminate the formidable grievance indicated. Nothing could be more disastrous to the interests of such a society than the prevalence of the conviction that it is unable to vindicate the rights of its members, when these are infringed by contraventions of the provisions of its charter. The mere creation of functionaries, however, in whose name all legal steps of whatever description might be competently raised and prosecuted on behalf of the body, would, we are persuaded, at once convince offenders that their impunity was at an end, and that they must either abandon the field, or connect themselves, in the legally appointed way, with the profession. At present very few of its members would be able to incur the anxiety and suspense, the trouble, expenditure, and risk connected with the individual prosecution of their legal claims, and we esteem it clear that in equity and, most probably in law, the officers of the society are bound to protect them.

For the immediate suppression of the grievance, however, no delay is necessary. The Council may at once appoint a mandatory here, to raise, in their name, an action of declarator and interdict against Mr Dick and the Highland Society, asking the Court to declare that the board of examiners appointed by the Royal College of Veterinary Surgeons is the only board legally competent to inquire into the capabilities of intending practitioners and give a certificate of capacity, and concluding that the defenders should be interdicted from, any longer, examining or granting diplomas. This is manifestly the direct way of getting to the bottom of the matter, and bringing the present system of injurious infringement to an end.

We would also suggest, for the consideration of the profession, whether it would not be advisable that the annual meeting of the corporation should be held at Edinburgh every third year. Taking into account the disparity in size and population between the two countries, it would not be reasonable to contend that that meeting should be held, year about, in Scotland and England. No doubt there is a large majority of members in the latter country at present, but, under the operation of the arrangement previously suggested, that would every year become less. Besides, there is an immense field in Scotland for veterinary skill, either entirely unoccupied or occupied only by those whose ignorance is more remarkable than their information regarding either the theory or practice of the calling they profess, and this, with the improved prospects now opening before us, may be expected shortly to be filled. With the exclusion of disqualified parties, and the increased security for protection in the enjoyment of the rights purchased by so much expenditure, industry, and toil, men of ability would no longer hesitate to connect themselves with the profession, and the inequality in numbers referred to would, in

the calling would lead to a co-equal improvement in the quality of its members, and, holding as we do that the transference of the corporation's annual meeting to Edinburgh every third year would have this tendency, we submit that that course should, in future, be followed.

There is a point in connection with the bye-laws to which we shall merely, in passing, advert. It is, as we have seen, provided in the charter, that no professor in any veterinary college shall in any way or manner interfere as an examiner of students applying for graduation. In oblivion, it should seem, of this palpable exclusion, it has been declared in the twenty-third bye-law, that "the professors and appointed lecturers of any veterinary school sanctioned by the charter shall be, *ex officio,* members of the Board of Examiners." This is surely a mistake, and, if so, it cannot too soon be corrected. The object of the exclusion in the charter is manifestly to secure, as far as possible, the most perfect disinterestedness and fairness in those who are invested with the responsible functions of deciding upon the qualifications of applicants for a diploma. It is hardly to be expected that a professor will be able to rid himself of the favourable or unfavourable bias created in his mind by the past conduct or demeanour of his students in the class, and, accordingly, it has been held expedient to disabilitate him from interference. It is submitted that the breach of this provision, and the introduction into the board of a person or persons expressly declared ineligible by the deed of constitution, would nullify all the proceedings of the board, were these proceedings objected to. The retention of this bye-law is, therefore, in the highest degree inexpedient, and an early opportunity should be taken for its abrogation. If, however, the faculty are of opinion that the presence of the instructing professors is necessary for the efficient conduct of the examinations, it is clearly imperative that power to appoint them should be obtained by means of an amendatory statute. At present a professor cannot examine. He is even excluded from interfering in any way with examinations. Of what use can his presence be to the board? What advantage can he himself derive from the appointment?

We shall merely remark that the constitution of these Boards of Examiners is a matter at all times demanding the serious attention of the profession. It is perfectly clear to us that they should contain, as a necessary element, a certain number of persons fully qualified, and practising as veterinary surgeons. The notion that such boards, issuing diplomas, can be made up chiefly of persons out of the profession, is a sheer absurdity. Those who have graduated already, and who have had the benefit of a large experience, are undoubtedly best able to exercise judicial functions in such a matter, and we would therefore advise that this should invariably be kept prominently in view. Not that we are desirous of excluding the extra-professional element. That were far from advisable. We only desire to have such an amount of professional ability as will guarantee the value of the verdict.

For the accomplishment of these objects, no legislative interference

is required. The means of remedy are, potentially, in possession of the corporation, and all that has to be done is to call them into exercise. But there is another matter of cardinal importance both to veterinarians and the public, which, it is to be feared, can only be competently redressed by parliament. It will be remembered that the charter sets out by stating that the members of the profession have been unfairly treated, and subjected to improper impediments in the performance of their duties, and that, in consequence of the urgency of these duties, they are very ill-qualified for the discharge of the parochial and other services now enforced on them by the law. It was naturally to be expected, from this narrative, that the corelative exemption would be given them in the subsequent statutory part of the charter. But, unfortunately, this has, *per incuriam,* been overlooked. The disabilities are merely narrated—not removed. The members of the profession are still liable to service as jurors, a source of loss and annoyance to themselves, and of detriment to the interests of the public. True, it has been urged that the High Court of Justiciary in Scotland has decided that veterinary practitioners, as being comprehended under the general designation of "surgeons," are entitled to exemption from such service, but, unfortunately for that doctrine, the writer of this article had, only a few weeks ago, to present a petition to the Exchequer for the modification of a fine imposed by that court, in consequence of the unavoidable absence, in a very pressing emergency, of a veterinary professor from Edinburgh. It is said that, upon the occasion on which exemption was granted, the Lord-Justice Clerk Hope, upon the statement of the plea, ordered the statute to be sent for, and, on finding that the phrase "all surgeons" occurred therein, pronounced the title of veterinary surgeons to relief, complete. But, it is much to be feared that the privileges of a chartered body are, in strict law, to be measured by the terms of their own deed of incorporation, and we are therefore disposed to hold that, in view of the narrative of the necessity for this exemption in that deed, and the absence of the corresponding provision giving effect to it, the statutory exemption of another class, even though expressed in terms so general as to appear unlimited, could not be held to confer it. This view receives additional confirmation from the fact that, in point of time, the statute relied upon was long antecedent to the elevation of veterinary practitioners to the *status* of professional gentlemen. And the opinion is further supported by the circumstance that, in 1851, a bill was introduced into the House of Commons, backed by numerous petitions to both Houses, for the special purpose of procuring for the profession relief from these liabilities. Everything went on favourably, and great hopes were entertained that the bill would have passed into an Act, but, unhappily it miscarried in committee, and no attempt has since been made to revive the application. The matter, however, is so very important that no time should be lost in again moving the Legislature to action. It is very well known that epidemic diseases

among cattle have of late been greatly on the increase, and that without the occurrence of the usual premonitory indications of their approach. We know of several recent instances in which these diseases have been fatal in consequence of the practitioner having to go a distance from his residence to reach the place at which the diseased animals were. This is bad enough, and surely it should not be aggravated by the addition of compulsory attendance in a Court for a purpose which so many of the lieges, less unfavourably circumstanced, are always at hand to accomplish. The attendance of unprofessional persons as jurors is in the public interest, and, as manifestly, for the public behoof, all professional persons, more especially those to whose discretion life and death are confided, should be exempted from such attendance. To this class veterinary surgeons, by charter, belong, and they are therefore both upon principle, and on grounds of expediency, entitled to the exemption claimed. We trust that the Council, in deference to these considerations, will again proceed with the former or a similar measure. With the increased enlightenment since the former endeavour, it is scarcely questionable that the attempt would now meet with success. The owners of domesticated animals are fully alive to the serious danger they incur through the compulsitor, upon those on whose medical skill they must rely, in the event of disease supervening, to neglect their own business and attend to public affairs. The public can well dispense with the services of such a body. The members of the body are constantly complaining of the serious loss and inconvenience they sustain. Surely there is an imperative call upon the Council to delay no longer in pressing the Legislature for a remedy. The form is in existence. The bill of 1851 is equal to all the wants of the case—the desideratum being, in fact, simply to bring the members of the profession within the scope of the exemption provided in the 6 Geo. IV., c. 22, which, *inter alios,* relieves "all physicians and surgeons duly qualified as such, and actually practising," "from being returned, and from serving upon juries." The council have an excellent plea in the narrative clause of their own charter. Unless the statement of hardship there made was a fiction or a hoax, it was intended, in the sequel, that the relief should be granted, to which that statement refers. It has been accidentally omitted, and that, with the other grounds specified, supplies them with ample incitement to action, and the most cheering prospect of success.

It may just be mentioned that a clause might, with great propriety, be inserted in the bill, relieving veterinary practitioners from the taxation upon horses used by them in the course of their business, This would only place them in the same position as their co-practitioners in other branches of the healing art. Why should they be less favourably circumstanced?

Such are the views which have presented themselves to our minds from an examination of the charter, and a consideration of the present state and prospects of the veterinary profession. Afflicted, in the

infancy of its existence as a body politic, with jarring and disunion of no ordinary kind, and still assailed by an element of antagonism which preys, in this division of the realm, upon its very vitals, it has nevertheless gradually advanced, and exhibits, at the present moment, greater evidences of prosperity and usefulness than ever before. The benefits of union amongst its members are more generally appreciated. The value of their charter is more fully recognised. The desire for a completely organized fraternity of scientific practitioners over the whole country is rapidly becoming general. We can perceive an aggregation of varied causes acting in unison for the realisation of this end, and sincerely hope the event may justify our expectation. We seek no monopoly. That, like the gift of tongues, is a thing of the past, and we might as well invoke the return of the one as of the other. The benefits we ask are benefits in which the public must share—the suppression of quackery and empiricism—the improvement of the quality of our practitioners—their exemption from burdens which are harassing to themselves, and hazardous to the community in which they labour. This is protection of the right kind—protection which adds to the prosperity of the individual, and is promotive of the general good. The privileges we enjoy, or may enjoy, under the letters-patent by which we are constituted, are of no ordinary kind. Our bye-laws and regulations are, as a whole, admirably framed. Nothing is adverse to our career of improvement, but internal jealousies and professional broils. These, it is humbly thought, may be first lessened, and afterwards removed by the suggestions above submitted, and we have therefore to solicit the aid of every well-wisher of the profession in our efforts to carry them into effect.

Veterinary Education. By Joseph Gamgee, Senior, New Veterinary College, Edinburgh.

(*Continued from p.* 70.)

In this third division of our subject, we purpose laying before our readers some considerations on farriers and farriery ; noticing, first, the art ; and last, though not least, the artizans.

The word *Farriery* (in modern English) implies the art of shoeing horses. That art we hold to be a fundamental branch of veterinary surgery,—a main pillar on which it rests.

Much as remains yet to be done in the cultivation of veterinary science generally, there is no branch of it, relative to its every-day requirement, in so deplorable a state, as the art of shoeing horses. Ill-understood by the veterinary profession, and, as a consequence, by the public also, its capabilities for doing good are not fostered, whilst its constant operation for evil, by deterioration and destruction of horses' feet, is unknown by those most concerned in the matter.

I may seem to make an unwarrantable statement, when I say that the importance of shoeing, in its relation to the economy and conservation of the horse, has not been appreciated, because much may be said and proved to the contrary. Senators have written on the subject long ago (the Marchese Venturi of Florence, the Duke of Newcastle, and the Earl of Pembroke, in England), besides other great men of different nations, including the most eminent who have adorned the veterinary profession. These have devoted much of their best labour in setting forth its importance, with the aim of developing sound principles and practice on horse-shoeing.

Again, the old proverb "No foot no horse," proves that the subject has been by some looked into.

Turning our attention from what has been said, to the little that has been done, we shall be in a better position to understand what is required.

When I say that almost nothing has been done, nothing except what mechanical labour has accomplished, and that more frequently thwarted than aided by the interference of miscalled science, I may expect to be met with the assertion that human knowledge is progressive, and also by the question—Why, if so, has this art been stationary?

I will not attempt to reply to the broad question, as to uniformity in the progress of knowledge. There is much oscillation, stagnation, and even retrogression, locally at least, in this branch of veterinary art, though the general rule may hold good. Probably, at no time were more lame horses to be seen in our streets than at present; no time when so many were prematurely worn out, and destroyed through lameness. A good, sound, seasoned, aged horse is an animal rarely met with now; and, to say that this state of things is not directly traceable to the bad state of the art of farriery, is to persist in stating what is not true. Nor are the miseries and consequent loss of property, in horses, confined to those we observe working in the street.

The gentleman's horse of pleasure and the race horse (the type and preserver of our finest breeds), are as unsystematically shod and managed, as is the twenty-pound hack which, stumbling, breaks its knees, and endangers the life of the rider.

It is not to the veterinary profession in particular that I address my remarks. It is eminently a subject upon which the public should be better informed than it now is. Great works are done by the public. Small sections only do small parts, and those often badly, because with views to partial interests.

The process of shoeing horses necessarily calls forth scientific knowledge as well as an artistic ability. Horses cannot be shod by such knowledge alone as suffices to make a machine of iron, however complex. Rule and compass serve for the mechanic's guide, but avail little or nothing in the art of shoeing horses. In the latter we work on living matter. A horse-shoe should not be merely a flat band of iron, of a given measurement, but a very different thing.

It is the required knowledge to carry out the art, affording protection to, without impairing the functions of the foot, that makes it what it is:—of great importance, difficult to learn, and of much public value when known.

We will now turn our consideration to farriers as a body. I was about to class these into masters and journeymen, but the former can hardly be said to exist now, veterinary surgeons having supplanted the old master farriers in towns. The country master horse-shoer is always a general jobbing smith, the shoeing forming a subordinate part of his business. His customers send their cart wheels, as well as their horses to be shod by him. The journeymen farriers of Great Britain form a numerous class of hard-working men, inferior to none of the community for their integrity and obedience to duty. There is no class of our mechanics whose labour is harder; no calling in which it is more necessary that a man be of mature age before he can become proficient; none in which men sooner become disabled from either want of stamina, or failure of sight and health. Journeymen farriers, as a class, are almost unheard of as seekers for redress of their grievances; unlike other artizans, who are congregated about the centres of our staple manufactories, the farriers are spread thinly over every town and village of the United Kingdom, and, in the aggregate, form one of the most numerous and least-understood classes in Her Majesty's dominions.

The condition of the farrier has deteriorated in latter years. Formerly, a sturdy boy was apprenticed to a master farrier, who received a small premium, for which the secrets of his art, as it was called, were to be imparted.

In those times, it was the aspiration of these apprentices to become masters as well as journeymen; but as veterinary surgeons supplanted the masters, that healthy incentive vanished. The new masters did not receive apprentices, in the same character. These received *pupils*, who could afford to pay to look on, not to work.

Since the farrier's small prospects of advancement have disappeared, fewer good recruits have volunteered into the body; and, as the multiplied requirement for hands in the engineering departments increased, young smiths have betaken themselves to that line.

Nothing has remained to attract the intelligent youth to the business of horse-shoer. He has no teacher, no instructing head or hand above him, who can give a reason for what he requires him to do. He works blindly, whereas, his mind should receive enlightenment, by which, pleasure and aspiration to progress would be created.

Yet, with all this, people wonder why their horses are lame! Some never try to connect cause and effect, others abuse the clumsy, ignorant farrier. I ask, who are the ignorant?

I have said nothing about the wages those poor men get for their hard work. In the provinces, these are very low; in towns, beginning with London, the wages are higher, but the work is excessive. Indeed, it is so everywhere, and that is incompatible with a thoughtful, well performance of the horse-shoer's business. Low pay, relative to work,

is inevitable in order to make ends meet, at the prices for which shoeing is done.

I have said that the country master smith gets his moderate profits by his jobbing, and does his shoeing with no profit at all, and sometimes at a loss. The same thing applies to the master in towns, although he is somewhat better paid for the work, his expenses being relatively higher.

Without resting my position on mere statement, I will refer to a few items and facts. We will take London, where the highest price is paid for shoeing, and where men are higher paid. Three journeymen farriers receive from L.5, 2s., to L.5, 5s., per week. Taking the lowest item, that gives 17s. a-day. They forge 60 shoes per day, or when shoeing horses, they put on 48 shoes for a day's work. Thus, each shoe, for forging, fitting out, and putting on, costs about $7\frac{1}{4}$d. for journeymen's wages alone. Besides this, there is the cost of iron, nails, tools, coals, rent—we fear we must not say profit. We must, however, deduct or allow for discount, or bad debts. Let us now see what price does this shoe fetch, which costs $7\frac{1}{4}$d., besides half-a-score other items to be added.

The prices paid for shoeing vary from 1s. to 1s. 3d. a shoe.

These prices, however, are what are paid for the shoeing of London saddle and coach horses. But shoes, as applied to Edinburgh and Glasgow cart horses, cost double the price for journeymen's wages, material, and other items, to that set down for lighter shoes,—presuming that every part of the process be as well done as it admits of.

If what I have said should have the effect of setting people inquiring, one object for which I am writing will have been accomplished.

The most difficult thing, however, yet remains to be considered. I have pointed to evils, the easiest part of all, for one who knows of their existence; it is not, however, so easy to determine by what individual or combined efforts this unsatisfactory state of matters can be set in the right way for progressive improvement.

We have seen that the master smith does the shoeing because he gets the jobbing; he gains by mending a poker or hanging a bell, but not by shoeing a horse; veterinary surgeons in towns follow, in this instance, the track of the old master farriers, they do the shoeing without profit, and make their gain on what they call the 'doctoring;' a man's practice is more or less, relative to the number of horses he shoes; practitioners cannot alter it; the old established and well-to-do do not want change, the new beginner cannot introduce it, or he would starve; the importance of the art of shoeing, as we have said, is rarely thought of. Owners of horses object paying fees to a man who, by scientific and artistic manipulation, restores his lame horse to soundness in an hour, by shoeing alone; and, if a reasonable fee were charged besides for the shoes, the practitioner would be called an extortioner. No; to get fees, horses must by bungling practice be first lamed, then blistered, fired, blemished, tortured, and for this people will pay a round bill, keep their horses for many months, and then sell them for what they will fetch, as useless, cast-off animals.

Parturient Apoplexy. By C. Hunting, M.R.C.V.S., South Hetton Collieries.

We concluded our last paper by stating our usual mode of treating an ordinary case of parturient apoplexy. We now propose to notice some of the evil effects of that disease.

There are three diseases which we frequently meet with following the comatose state of "milk fever," viz.—pure or general fever, inflammation of lungs, and metritis, and they occur in frequency generally in the order that I have placed them, and the first-mentioned disease, if not quickly arrested, frequently produces one or both of the latter. Occasionally, after the comatose stage has passed over, our patient rises upon her legs, and, although staggering a little at first, the countenance does not indicate the existence of pain, the temperature of the surface of the body is in a normal condition, the animal partakes of a little food, the bowels and kidneys are performing their natural functions, the udder becomes softer, and milk can now be drawn in larger quantities, and our patient requires nothing beyond good nursing and proper diet. In all such cases, we should be careful not to run away with the fanciful notion, that diffusible stimulants, vegetable or mineral tonics, are necessary to assist nature; the chances are, that our medicaments will be a principal means of obstructing nature in her mighty restorative powers, and help to bring on that state we so much wish to avoid, viz.—pure or general fever, which is much easier to understand when seen, than to describe on paper.

Not unfrequently after our patient has regained the use of her legs, and perhaps eaten freely for a few hours, we find, some twelve hours after, that although the animal eats a little, gives an increased quantity of milk, and the contents of the bowels and bladder apparently in a natural state, yet we perceive almost at a glance that our patient is not doing as we could wish, the breathing is a little accelerated, the ears and horns abnormally hot, or perhaps one side hot, the other cold, the eyes full and anxious, the muzzle dry, the mouth hot, and the legs, teats, and udder generally cold; in most cases the pulse is full, the sub-maxillary artery larger than usual and somewhat bounding under the finger, the regurgitation of blood in the lower parts of the jugular generally strong, the sounds of the heart generally increased, the pulsation mostly from 65 to 75; these are the symptoms we frequently see in an animal from 12 to 24 hours after the comatose stage of parturient apoplexy has passed off, leaving the patient apparently in a favourable condition. In all such cases, we cannot be too particular in our examination of the heart and arteries, because it must depend entirely upon the force of the heart's action, and the volume of the pulse, as to whether we should bleed or not; and the difference between bleeding and not bleeding, in a case such as we have described, amounts to nearly the same thing as that be-

tween the life and death of our patient. On the other hand, if we have all the symptoms I have described, *minus* the condition of the pulse, and instead of a full bounding artery we have a small feeble pulse the same in frequency, or perhaps a little quicker than the strong, and we then bleed, we risk the destruction of our patient in the latter in the same proportion as we should in not bleeding in the former case. Our subsequent treatment also, in these different states of the circulation, must be equally opposite; thus, where it is proper to bleed, we give a saline aperient, sulphate of potass water, with small doses of calomel, and about once in twelve hours, a powder, consisting of morphia, camphor, nitre, sulphur, and carii pulv.; in those cases where we meet with the small feeble pulse, we give sulphuric æther, nitric æther, liq. ammon. acet., sulphate of potass water, sulphate of quinin, camphor, and carii pulv., which, with strict attention to diet and good nursing, generally brings about a state of convalescence in four or five days.

In some of these cases we meet with the greatest difficulty in keeping up even a very partial appetite, when every symptom otherwise is improved considerably; the breathing is almost natural, the pulse fuller and stronger, the extremities and surface of the body warm; the animal looks around when the other cows are fed, as if anxious for food, but obstinately refuses to take, voluntarily, every kind of ordinary provender. When this is the case, it is necessary to give the most positive orders respecting the diet, because, if you do not succeed in restoring an appetite within about 36 hours, the chances become exceedingly small as to your patient's recovery, notwithstanding the gruel and medicinal agents that are poured into her stomach. We should never be satisfied with the statement, that they have tried everything, but she will not eat any. My answer to such persons is, almost invariably, *you must make her eat*, and which can frequently be done, but not by placing before the animal a large handful of hay, a lot of cut turnips, or a pailful of mash and boiled barley, to take or leave as she chooses; but I contend that, in such extreme cases, the advantage of a "Soyer's system" is of as much benefit to the quadruped as to the biped.

He who is satisfied to leave such cases to nature, and the nursing of indifferent owners, will frequently lose a valuable animal, the recovery of which would have added greatly, and justly too, to the reputation of the professional man, and through him to the profession generally. What man is there in the profession that has not noticed the wonderful difference between the progress of his cases when under good nursing, compared with those placed under negligent or careless persons. I apprehend there is not one. In such cases as we have just described, the difference amounts to nearly the same thing as between life and death. We should, therefore, look out for the man or woman on the farm upon whom we can best rely, and give them the most minute instructions how to carry out our plan of dieting, and, if possible to attend to this animal only, placing before her every

hour or two a small quantity of different kinds of provender; if she will not take the first offered, try another, and another, of the very best that can be obtained; if in the summer season, she should be driven out slowly into the sweetest and best pasture for a few minutes; if this is not practicable, the young heads of green tares or clover should be cut off and placed before her; if she will not take them, they should be put into her mouth in small pellets, time after time, so that she must masticate, even if she will not swallow them; a little malt mash, a few dry bruised oats or barley, put into her mouth in small quantities, will sometimes tempt her, when chewing, to swallow a few; also pieces of young turnips may be placed between the molars, as also small pellets of the sweetest and best hay; and in some cases where all these have failed, especially in the winter or early spring, we have cut up a green sod from under a hedge facing the sunny south, and cut this into small pieces, and placed in the mouth of our patient, with the best effects. We have frequently occupied ourselves for an hour in carrying out this patient plan, and, not unfrequently, have been well repaid for our labour; but we disapprove of leaving any food lying before the animal's head for more than a few minutes; if she will not take any voluntarily, let her have it offered fresh at intervals, and if you can, by the means we have mentioned, only induce the animal to take two or three bites at each time, in nine cases out of ten, by strict perseverance, you will save your patient.

When these cases terminate in inflammation of lungs, or 'calf-bed,' the symptoms of which are generally seen about the third or fourth day after the animal has regained the use of her legs, they must be treated in the ordinary way; but the majority of such cases, when terminating in either of the latter diseases, almost invariably prove fatal.

Cerebral Apoplexy in a Horse. By Joseph Marston Parker, M.R.C.V.S., Birmingham.

On Thursday, March 7, I was called in to see an aged bay gelding, the property of the Great Western Railway Company, and from the foreman I was able to glean the following history of the horse, up to this date.

He was bought about five years ago, and was ill for a long time with influenza, but never seriously affected. He was put to work in due course, and beyond being rather bad-tempered, and, as the man said, 'curious in his ways,' there had been nothing to call for any remark till about the 1st of March this year, when he refused his food and became very stupid. This stupidity increased daily till the 6th, when he was sent to Birmingham by train from Leamington, at which station he had been working for two years. He now became paralysed, and was disinclined to move forwards, though he backed

readily, and was conscious of any order that was given him. He walked from the railway station to Hockley, where the stables are, a distance of 1½ miles, without assistance, though at any noise he ran back. On seeing him, I found no very acute symptoms present. The pulse was 44 and natural in force, the eyes half-closed and amaurotic, the sense of seeing *entirely* gone in the near eye, and it was indistinct in the off eye. He was feeding slowly, on my going into the loose box, and could turn round without difficulty—though his movements gave me the idea that the power of volition was but *partial*—both fore and hind limbs were equally affected. The bowels had not acted for twelve hours, so I at once gave 7 drachms of aloes-barb., and ordered clysters to be given every hour, and some thin bran mash the only food to be offered to him. I bled from both facial veins, and applied counter-irritants to the poll and cranium.

8th. The horse is evidently better, he can see distinctly with both eyes, has purged, and moves with greater freedom, showing now no inclination to run back. He is rather sick from the aloes. The mash to be continued.

9th. Still improving, the dung pultacious, his appetite good, and symptoms of viciousness returning, as he begins to look wicked, which I hailed as a return to his normal state.

11th. To-day I saw him walked out; there were no signs of paralysis, but he was very weak. His appetite not so good, and the sleepy look again apparent. The dung was getting hard too. The poll and temples were stimulated, and an alterative ball given.

12th. I was nearly kicked out of the stable this morning by my patient; though weak, he tried to the best of his ability. His appetite was very good again, and he seemed to be stronger. He was led out for five minutes.

13th. No change from yesterday.

14th. To my surprise I found the animal lying down, quite unconscious, the eyes closed, mouth partly open, no sense of feeling anywhere present, and, in about eight hours from tumbling down, he died without a struggle.

I thought that the brain had been affected sympathetically and sub-acutely at first,—viz., on the 1st of March, and that probably there was a small clot of blood pressing on that organ; and, as he improved under treatment, and there were no violent symptoms, I hoped that the clot was becoming absorbed to some slight extent.

On making a *post-mortem* examination, I found the brain in the state represented,—a large tumour pressing on the upper and posterior extremity of the left hemisphere. Whether the tumour was a partly organized clot I leave to abler hands than mine to determine, as, after showing it to Prof. J. S. Gamgee, it was put into a box and sent off at once to Edinburgh. I may, however, venture to state my opinion, that the tumour was not of recent origin, as the brain was absorbed by the long-continued pressure of the mass. I

have not disturbed the brain itself at all, so there may be some other pathological curiosity of which I am unaware at present.

[Mr Parker's case will be perused by our readers with much interest, and we thank him for the specimen, of which we have obtained a good water-colour drawing. In our opinion, attacks of apoplexy, such as the one above described, occur in the horse most frequently as the result of injury, and the fact that the subject of the above case was vicious would appear to bear out such a supposition. The last case we had was in a mare, to which we were called in the last stage of an attack of colic, and by violently knocking herself about in the stall, effusion of blood had occurred below the crura cerebri, which gave rise to symptoms of coma and death.

Mr Parker's case is one of old and, probably, relapsing apoplexy, and this opinion we form from the following appearances and microscopical characters. Lying on the posterior lobe of the left hemisphere, we found a solid and nearly spherical tumour, 2·2 inches long and 1·6 inches broad. On raising it, it proved completely detached from the cerebral mass, and divided into two portions, a lesser internal and posterior, and a larger external, the two applied by a flattened surface as if severed by a section.

The upper part of the tumour is covered by a dense white membrane, only partially adherent, and which appears to be a somewhat thickened portion of dura mater. Directly beneath and around the tumour are a number of flattened stratified scales. The separate layers are shiny and brittle, and prove by the microscope to be solidified lymph, without the slightest morphological character. The whole of the thickened portion of dura mater above-mentioned is lined by a dense coating of super-imposed strata of the same solidified fibrin.

A section through the middle of the tumour discloses that it is a solid mass of coagulated blood, undergoing the usual changes of apoplectic effusions. It is of a deep red colour, indicating its comparatively recent origin, though, from the colourless external strata, I should be led to suppose that the animal had suffered from apoplectic effusion at two distinct and distant periods.

The posterior lobe of the brain is evidently, to some extent, atrophied, though the amount of flattening is deceptive as in all recent apoplexies, and sufficiently explains the irrecoverable cerebral disturbance.

On the whole, the brain appears to have been the seat of some determination of blood, but had a remarkably healthy appearanc

with the exception of the two choroid plexuses, which are slightly thickened from a deposit of cholesterine, as commonly found in aged horses.—Ed., *Edin. Vet. Review.*]

The Exhibition of Medicines: A Lesson to Farmers.

By James Brydon, Peebles.

On the 26th of February last, I met Mr D., a farmer near Traquair, in the Peebles market, and he complained that a yearling stirk had been seized with severe symptoms of illness that morning, and he thought, from the appearances described as characteristic of quarter-ill, that it was this disease which had appeared amongst his stock. His farm has always been clear of the disease, but he has been feeding his animals well, and the whole were thriving fast. It was one of his best that had taken the malady, and he thought he should have to destroy it.

On the 27th, I called at the smith's shop at Traquair, and found that one of the men was away to the farm bleeding the cattle; and I then went to see them, and learned that the one seized had been destroyed, and the others were being bled as a preventative. This practice I condemned, and suggested that I should send some powders which would benefit the animals, and probably keep off the disease. Youatt's work on cattle had been lent the farmer, and the positive manner in which bleeding is recommended for "Inflammatory Fever" had so prejudiced him against any other remedy, that he was quite prepared for the remarkable incident which followed, and on which he could put but one construction.

I sent by post on the 28th ten powders, one for each animal, containing each—

Magnesiæ sulphatis . . .	℥xii.
Pulv. rad. gent.	ʒss.
Pulv. rad. zing.	ʒss.

To be sweetened with treacle, and given in solution.

The farmer proceeded to administer to every one its respective dose, and the whole were so fresh as to render the task somewhat arduous, and one of the animals proved so agile as to clear at a jump a high gate closing in the straw-yard.

The medicine was given, and three or four animals manifested, immediately after, symptoms of great irritation. The most vigorous that had first got away when attempts were made to catch him, was most seriously affected, and so far as apparent cause and effect could operate in forming my client's opinion, there was nothing in favour of my medicine or myself, but very strongly the reverse. Accordingly, the news spread that I had destroyed the cattle, and must have given them a poisonous dose. I immediately proceeded to the farm, and found only the one stirk much affected, but he gave signs of great distress,

laboured breathing, and appeared fast approaching death. The smith had been called up again to bleed, and I was under the necessity of having to obtain further advice, as the farmer threatened to hold me responsible for injury done to his cattle.

I left the same evening for Edinburgh, and Professor Gamgee accompanied me back on the 2nd inst. On reaching the farm, we found all ready to resist any inquiry on our part, especially as I had hinted that I was persuaded nothing could have been more harmless than my medicine, and if any further reports were spread declaring that I had killed the cattle, I should seek redress by law for injury to my reputation.

Professor Gamgee examined the sick animal, and cross-questioned the farmer as to the circumstances under which the medicine had been exhibited. We learned that the farmer had given the medicine himself, and that the animals proved restless and coughed considerably. It was immediately after getting the medicine that they manifested laboured breathing, &c., and the one worst affected had not been purged at all. All the others were slightly relaxed by the medicine, but those which were unfavourably affected seemed to be acted on less, and purgation was only slightly observed in them, if at all.

Coupling the history with the symptoms, it was evident to Professor Gamgee that the cattle had been improperly drenched, and that a portion of the medicine had been forced down the trachea. The discharge of thick mucous by the nose as the animal lowered its head, the loud rough râle in the windpipe, though clear respiratory murmur over the whole surface of the thorax, led Mr Gamgee to think that the animal might recover, and relieve itself of the irritant which, when in contact with the mucous membrane of the respiratory passages, had caused so much alarm. This happy result, however, was not realised, as, within a week after we visited the cattle, the one died from irritation and exhaustion.

Practical Memoranda. By A. C. Muir, M.R.C.V.S., Dunbar.

The Contagious Nature of Pleuro-Pneumonia.—There are yet some sceptics in the agricultural world regarding the contagious nature of pleuro-pneumonia. Some that have had their farms exempt from the disease, and have therefore had no experience regarding it, may listen to the bold assertions of those who start from preconceived ideas, and refuse to listen to evidence such as that offered in the recently published Treatise on "Dairy Stock," on any scientific or practical question such as that under consideration. The following case is so pregnant of warning to farmers or veterinarians, that I offer no apology in adding one solitary instance to hosts of facts which it confirms and supports.

On the 8th of June, 1860, I was requested by J. Thom, Esq. of Catachill, Auchtermuchty, to attend a calf. Having found, on careful

examination, that this animal was seized with the epizootic lung disease, I ordered it to be at once removed at a distance from the other stock, and inquired as to the origin of such an attack. The farm had never been the scene of contamination by this contagious disorder. The proprietor had been brought up on the place since childhood, and had never known of a similar occurrence, and the calf affected, with another by its side, had been purchased only a fortnight before. They were both from England, and had evidently, from the prompt appearance of the disease, been exposed to the influence of contagion before purchase. On receiving such information, I advised the calf to be destroyed and buried. I was, however, jocularly reminded that it was my province "to cure and not to kill," and though I rejoined that "prevention was better than cure," and that the other stock was in great danger, a request was made that the calf should be treated, A week later, the second English calf appeared affected, and a few days later the first one died. The second was destroyed after a short time, and, indeed, when too late to save the other stock on the farm. On the morning of the 15th of June, I was called by Mr Thom to see a cow that had been bred on the farm, and I found her in the early stage of the disease, and recommended that she should be sold off at once, but again I was requested to try the effect of treatment. This I did up to the 21st of July, and during the whole time the animal appeared occasionally better and occasionally worse, dying on the 21st. I then examined the other cows, and found two indicating symptoms of pleuro-pneumonia. I advised that the persons who had attended the diseased animals should keep clear of the healthy ones, but this, like all other injunctions, was disregarded. On the 2nd of August, the bull that had been serving the cows was taken ill, and sent off immediately. There were a number of year-olds on the farm, which I bled and gave aperient medicine to, ordering them at the same time to be removed as far as possible from the others, and they all escaped.

At one of my weekly visits to the farm in August, I heard that another cow had the disease, but I was told that a cure had been found, and on being invited to see her, I learned that she was receiving some white powders, and her sides had been blistered. The blistering had been resorted to in the most vigorous manner, and the cuticle had all pealed off, and left the whole skin inflamed and ulcerating. I saw that the animal was in a dying state, but refrained from interfering; and so confident were they of success that the animal was allowed on a field near to one on which a number of two-year-olds were grazing. As they could approach each other, I strongly advised the cow to be removed, but my suggestions being disregarded, the cow died and contaminated the two-year-old stock amongst which the disease appeared, and the whole were sent to Edinburgh, and sold at a great loss. Several hundred pounds would have been saved had Mr Thom listened to me at first, and he confessed that he only saw the force of my arguments when too late.

Splenic Apoplexy in Cattle. By William M. Reid, M.R.C.V.S., Leochell-Cushnie, Aberdeenshire.

Case I.—On 7th December I was requested to attend an ox, rising three years old, the property of J. T., Cushnie. On inquiring into the history of the case, I was told that the animal was observed in good health the previous night, but somewhat indisposed that morning; and, being rapidly getting worse, he was bled, and a pound of Epsom salts administered.

When I arrived the animal showed the following symptoms: lying on its right side; unable to rise; perspiration all over the body; respiration laborious; throwing his head on the stall and then round to his side; and moaning as suffering acute pain; saliva dripping from the mouth; a frothy mucus around the lips; conjunctiva injected, and tears running from the eyes; soft, weak, and almost imperceptible pulse, ranging from 70 to 80; fæces, thin, watery, and of a greenish colour. With the appearance of such symptoms, my diagnosis was, that it was a case of splenic apoplexy, and ordered the animal to be slaughtered, which was immediately done.

Post-mortem appearance.—Air-passages healthy. Acute carditis, with effusion of serum into the pericardium. On the abdomen being opened, the spleen was observed to be about one-and-a-half or twice its natural size, full of dark-coloured half-coagulated blood, and a rupture near its posterior extremity, about $1\frac{1}{2}$ inches in diameter; its internal fibrous tissue broken down and easily torn asunder. Stomach and intestines healthy, except the latter somewhat congested. The liver enlarged, softened in consistence, presenting several yellow spots on its surface, and throughout its texture. The gall bladder enlarged and full of thick dark-coloured bile. The urinary bladder full of coffee-coloured urine, and its inner surface congested.

Case II.—On the 7th January I was requested to attend a quey, rising two years old, belonging to Rev. Dr S. On arrival I found the animal standing with its back arched, leaning on to the stall, hanging its head in one corner, with a haggard, listless appearance. Champing of the jaws, a frothy mucus round the mouth, saliva dripping from the lips; tears running from the eyes; perspiration all over the chest and loins. Urine, when voided, of a brown or coffee colour, and having a strong odour. Respiration accelerated. Soft, weak pulse, ranging from 65 to 70. The animal moved from her place with reluctance, and when pushed along walked with a staggering gait, hanging on to anything within her reach, or thrusting her head into any corner. I ordered her to be immediately slaughtered. Post-mortem appearance on being dressed.—Air passages healthy. Heart healthy. Stomach and intestines healthy, except their inner surface, showing some spots of vascular action. The spleen of its natural size and consistence. The liver enlarged, of a yellowish appearance. The gall bladder enlarged, full of thick bile. The other parts of the body showing the usual healthy appearance.

Case III.—On the following night, January 8th, an ox, rising two years old, became affected, from the same stock. When I saw him a few hours afterwards, the symptoms were,—dulness, a tendency to lie, and when up, standing in one position, head extended. Soft, full pulse, from 50 to 55 per minute.

℞ Linseed Oil, . . . 4 gills.
Aloes, ... 6 drs.
Amoni. Carb., . . . 3 „ mix.

were then given, and a mustard poultice rubbed over the region of the stomach.

January 9th. The animal a good deal worse to-day, standing with its head into the corner of the stall. The eyelids half-closed, but, when disturbed, the eyes becoming wild and prominent; saliva dropping from the mouth; tears running from the eyes. Accelerated respiration; flapping of the sides; urine of a brown colour. Fæces voided in small quantities, of a dark appearance, accompanied with straining, and violent action of the abdominal muscles. Pulse very weak, from 60 to 70, the action of the heart audible at the side. When made to walk, went with an unsteady gait; seemed almost blind, stupid, and delirious; lifted its fore-feet higher than usual, stumbled over anything that might happen to be in the way. The eyes appearing wild and prominent, and when left alone would stand into some corner, and get into its comatose condition. I then requested that another practitioner should be consulted,—at the same time diagnosed the case as being splenic apoplexy, and that death was to be the result,—who, on being called, gave it as his opinion that it was a case of lead poisoning; and, on seeing some marks of paint or red oxide of lead about the shed in which the animal was standing, became convinced that his diagnosis was right.

January 10th. To-day gradually getting worse. Lying down unable to rise. The former symptoms becoming more marked and confirmed.

January 11th. The previous symptoms still present. Diarrhœa commenced. Fæces of a dark greenish appearance. The animal struggling, throwing its head round on its side, and moaning as if suffering acute pain. Pulse quite imperceptible.

January 12th. To-day the animal still alive, but sinking very fast; moaning piteously; died towards night. Post-mortem appearance.—A brown rusty appearance of the muscle and cellular tissue along the back and loins. The blood in the body of a dark colour, and not disposed to coagulate. The left lung (being the side on which the animal was lying during life,) congested with dark blood; the right lung healthy. Effusion of blood into the pericardium, its inner surface and the tissue of the heart ecchymosed. First and second stomach healthy, third showing some spots of irritation throughout its inner surface and the mucous lining, easily separated from the rest. The fourth stomach completely empty, slightly congested on its outer surface, the inner surface showing several dark inflamed spots of about one

inch in diameter towards the pylorus. The small intestines congested, showing the same spotted appearance along their inner surface. Large intestines healthy. The spleen filled with black, half-coagulated blood in its posterior extremity. Anterior extremity almost empty, its fibrous tunic spotted in appearance. Liver slightly enlarged, softened in consistence, some of the lobes showing a yellowish appearance throughout its texture. Gall bladder enlarged, full of thick, dark-coloured bile. Left kidney of a yellowish, blanched appearance, and in a soft poultacious-like mass. Right kidney almost healthy. Urinary bladder filled with coffee-coloured urine, and its inner surface slightly inflamed.

Fibro-Cystic Tumor of the Tongue. By the Same.

On the 10th February last, I was requested to attend a quey rising three years old, the property of C. S., in this neighbourhood. The animal appeared low in condition, the coat of a staring and unhealthy appearance, eye dull and somewhat sunken, champing of the jaws, saliva hanging around the mouth, appetite keen, but unable to take any solid food, rumination stopped. On inquiring into the history of the case, I was told that the animal had fallen off in condition since October last; and from that time the tongue appeared to be a little swollen, and the animal had been unable to masticate her food, and was fed with gruel.

On examination, the unattached portion of the tongue seemed somewhat enlarged, of a bluish colour, and indurated, easily bleeding when handled, and attended with severe pain when pressed upon. Along its surface could be seen numerous white cells embedded in its tissue of about $\frac{1}{16}$th of an inch in diameter. The animal was ordered to be destroyed. The body had the usual healthy appearance, except the tongue as far back as the frœnum lingua, which appeared to be degenerated into a fibrous tumour, and embedded throughout its texture with cells of an oval, flat, or kidney shape, and containing a fluid of a white colour. The tip of the tongue was almost made up of such cells, and intersected with fibrous tissue, towards the frœnum lingua they were less numerous, and appeared adhering to each other like clusters of grapes, until, at the extremity of the tumor, they were lying single or in pairs in the half-degenerated tissue.

Croup in Calves. By James Law, New Veterinary College, Edinburgh.

It is related of a certain obscure tribe of Esquimaux that, on first beholding a ship approaching their shores,—completely misconceiving its character, and considering it to be some giant bird, hitherto unknown in these regions, they proceeded to salute it according to their most

approved system of etiquette, and to inquire concerning its origin and pursuits. Such a mistake may appear in our eyes glaringly absurd, and we may be ready to pity the perpetrator of such actions, as having attained to the very acme—or utmost profundity, rather, of stupidity; yet the misconception in this case is by no means so far removed from certain errors of our own as self-love would often lead us to infer. Perhaps no idea was more likely to occur to the minds of these originals than that of the resemblance between the sea bird, moving easily and gracefully o'er the watery undulations, without visible organs of locomotion, and this ocean traveller rearing its lofty breast of shining canvass from the briny wave, and performing its various motions, without oar or paddle. The appearance of such an object differed widely at least from that of the rude and unwieldy canoes in which they were accustomed to pursue their piscatory avocations. While, then, we overlook this failing of theirs, we may perhaps claim as our right an equal forbearance in faults we commit in misinterpreting certain by no means unfrequent occurrences.

Examples of such delinquencies we have in several of the diseases affecting the lower animals. Why was Hectic so long overlooked in veterinary pathology, after its occurrence had been recognised among the diseases of man? Yet, it is only within a very few years that English veterinarians, at least, have acknowledged such a condition. Many similar instances are at hand. I have myself seen much breath expended, and much time and talent—shall I say, wasted? in the endeavour to show that the cattle plague of the Continent,—and with which our own shores were so lately threatened,—was only constipation of the third stomach, brought about by improper diet and regimen. Other disorders have shared analogous fates: one of these —Croup—though acknowledged on the Continent as an occasional disease of calves, and even of other young animals, was long completely ignored on this side of Dover. Is it, therefore, no more than a phantasy? I would emphatically repudiate such a conclusion, as already proved false; indubitable cases having been reported by various veterinarians, both on the Continent and more lately in Great Britain. To the already existing, and it must be acknowledged meagre stock of cases, I mean to contribute an addition, in the report of an instance of this disease it was my privilege to treat two years ago. Before doing so, I would warn any one against the inference that this is a malady of everyday occurrence; it is probably always, or nearly always, enzootic, and dependent on various local causes, of which I may say more by and by. In some localities, the affection may be said to be not uncommon, but even there, a long series of years will often elapse without a single case making its appearance. While, then, it is unphilosophical to *deny* its existence, on the ground that so few cases have been observed, *simple scepticism*, as to whether it has occurred, may be considered as a very venial crime.

I will not enter into the consideration of the general coincidence in

diseases, and even in the type of diseases, as occurring in man and animals, though by such a course, a tolerable *a priori* argument might be constructed, for the existence of this malady in the brute creation. I will rather relate the case referred to, the symptoms of which may furnish material for an argument of an indisputable *a posteriori* character.

On the 13th March, 1859, Mr Welsh, Spott, requested my attendance on a heifer, of the shorthorn breed, about twelve months old, which was, according to the best judgment of those about it, presenting symptoms of pleuro-pneumonia. On my arrival, I found the animal in the hot stage of an active fever, the pulse beating upwards of 100 per minute, the surface of the body warm, and the mouth hot, with some tenacious mucus hanging from the lips. There was difficult and laboured breathing, accompanied by a loud sonorous noise,—louder in inspiration than in expiration. Considerable pain and swelling was evident in the region of the throat, with extreme tenderness on manipulation,—the least pressure giving rise to a violent fit of coughing. During the paroxysms thus induced, there were occasional eructations of small quantities of the contents of the stomach, caused, doubtless, by sympathetic or reflex action. The visible mucous membranes were of a livid colour, as is usual in such cases, from the imperfect aeration of the blood, while the general appearance of the animal indicated great restlessness and anxiety. All the endeavours, made by auscultation, percussion, and otherwise, to ascertain the condition of the lungs, were rendered futile by the general restlessness and loud stertorous breathing. From the difficulty in this last operation, the creature seemed in constant danger of suffocation.

The animal was removed into a comfortable dwelling, clothed warmly, and had a blister rubbed over the throat. A purgative was prescribed, but as no such agent was at hand, its administration was delegated to the person whose duty it was to attend to the wants of the patient.

On my arrival on the morning of the 14th, I found that the symptoms presented differed in no respect from those observed on the previous night; but, on inquiry, I learned that, on the first visit of the attendant in the morning, the breathing had been comparatively easy, and the loud noise completely absent. This alleviation must have been short-lived, however, as at the time of my visit, the spasms were quite as severe as on the previous evening. My orders as regarded the laxative not having been attended to, I now administered 1½ pints of linseed oil, and ordered ten drops of Fleming's tincture of aconite four times a-day, the first dose to be given at noon.

On making my visit on the morning of the 15th, I found some amelioration of the symptoms. The bowels had responded freely to the medicine, the spasms were completely relieved, the excited heart's action was improved, and the pulse was now beating not more than 90 in the

minute. There still, however, remained great dulness and languor, and there was still a complete *anorexia*. The condition of the animal now permitted a careful examination of the lungs, by which I was enabled to pronounce it free from pleuro-pneumonia, or other thoracic affection. Two drachms of nitre, and one drachm of tartar emetic, were now prescribed, to be given in thick linseed gruel: the aconite was continued in its former doses.

On the 16th, I found the general aspect of my patient largely improved; the spasms of the larynx had not returned, the pulse was beating regularly at 84, and the appetite was restored. I now ordered the dose of aconite to be diminished by a half; the other treatment to continue the same.

From this time the improvement went on rapidly, and the patient soon returned to its accustomed habits.

In this case, the most prominent external signs of croup were well marked. The attack, like in many croupous seizures, was sudden, the disease speedily manifesting itself in all its intensity. The attending inflammation was of the most acute character, and accompanied by the full hard pulse, and high febrile symptoms of croup. The loud, and I may say crowing, noise, made in breathing, is no less characteristic, while the temporary alleviation of this, during the violence of the attack, fully substantiates the assumption that it was spasmodic in its origin.

It may be said that I had no proof of the presence of false membrane. True, no such production was observed, nor could this, in the nature of the disease, have been seen, unless the case had terminated less favourably. But it may be respectfully submitted that no such proof is necessary. We do not seek a sight of an engorged bronchus to assure us that an animal is suffering from bronchitis, nor of a hyperæmic pleura to decide upon the presence of pleurisy. In these diseases, the external physical symptoms are held to be sufficient, and why not also in croup? Besides, it is not quite necessary that false membrane of a fibrinous character exist, to constitute an attack of genuine croup. The learned Virchow, at page 391 of his work on Cellular Pathology, remarks that, "ordinary croup does not, at its very outset, manifest itself in the form of fibrinous croup; at the commencement, at a time when the danger may already be very considerable, there is often nothing else found than a mucous or muco-purulent false membrane." It may be remarked that this is not an idea peculiar to Virchow, but is shared in by the most eminent physicians, both in our own and in other countries. In the case before us, then, there was, probably, no false membrane, other than a covering of tenacious mucous, though with other symptoms so truly diagnostic of croup, it is highly probable that, had the malady not been checked as it fortunately was, a fibrinous exudation would rapidly have supervened.

Without entering into a lengthened dissertation on croup, a few general remarks on the disease may not be unacceptable.

The name *croup* is essentially Scotch, being familiarly used in the Lowlands of Scotland to signify—*to croak.* Scotchmen may be further interested in the fact that the term has been generally adopted over the continent of Europe, and in America as well, so that this expressive Scotticism is almost co-extensive with the occurrence of the disease. The disease itself consists essentially in acute inflammation or high vascular irritation of the larynx, associated with more or less severe spasms of its muscles, and very frequently, though not invariably, with a fibrinous exudation on the mucous membrane. Most of the diagnostic symptoms have already been referred to. It need only be added, that in the second stages, the expectoration of false membranes may be looked for. The disease may, however, be complicated with pleuro-pneumonia or other chest affections, and on such occasions the attending dyspnœa will be more urgent, and the purple appearance of the visible mucous membranes will be deeper. The issue of such cases, too, will be more commonly fatal than in the simple uncomplicated affection. Besides the variations induced by coexisting inflammatory affections, the symptoms may differ according to the type of the attending fever. This may be sthenic, as in the above-mentioned instance, and in such cases, if promptly and energetically treated, a favourable termination will be most commonly induced. The fever has, however, a marked tendency to assume a typhoid form, the violent dyspnœa presents a sufficient aeration of the blood, so that it remains, to a certain extent, in that morbid condition in which there is a great lack of oxygen, and a saturation with carbonic acid, in which it is incapable of supporting the healthy processes, and in which it proves little better than a narcotic poison to the nervous centres. It will accordingly be found that, when an active attack of the malady has continued for several days, the fever takes on a typhoid type, though, at the outset, it bore a sthenic character. When this is the case, the chances of a favourable termination are much reduced. When it occurs, as it sometimes does in an epizootic form, all cases show a remarkable tendency to assume the typhoid type at the very outset of the disease, and on such occasions the mortality is very largely increased.

The prognosis will always depend on the stage of the disease, on the strength of the patient, on the type of the fever, and on the existence or non-existence of complications. At all times many cases will terminate fatally, and for this it is well to be prepared.

The *causes* of the malady are not well understood. Low, damp situations would seem most liable, more especially if the animals are much exposed. The general causes, indeed, correspond in great measure to those of laryngitis occurring in its ordinary form. Sudden excitement and violent emotion are recorded as among the immediately exciting causes. Age seems to have a great influence in determining the disorder, since the great majority of cases occur in animals varying from six months to a year old. Why the laryngeal inflammation should in this case take on the process of

throwing out fibrinous exudations has never been demonstrated, nor can its greater liability to attack young animals be accounted for. The exudation is in this case associated with a very elevated type of inflammation, but this cannot be accepted as a satisfactory explanation of its productions. We met with inflammations in older animals of so severe a nature that all secretion is for a time suspended, and we meet with all intermediate degrees, from the mildest hyperæmia up to the most intense vascular irritation; why then do we not more frequently meet with fibrinous exudation? Moreover, the affection is almost confined to young animals; how can this be accounted for on the supposition, that it is only an elevated type of inflammation? Some specific cause must be acknowledged; but as regards the origin and nature of this cause, it is imperative that we acknowledge the most profound ignorance. The hypothesis may be hazarded, that the morbific agent or agency, whatever that may be, is capable of inducing such a change in the impressible cells of young animals, as leads to a perverted secretion, and the consequent formation of false membrane.

The *cadaveric lesions* will vary according to the mode of death; when the animal dies asphyxiated during a paroxysm, there will be the congested lungs and the general appearance characteristic of death beginning at the lungs; when the patient, on the other hand, dies, in a comatose condition, from the venous character of the blood, the engorged venous system and other accompanying effects will be manifest. To pass over all these, it may be said that the truly characteristic lesions are those of the mucous membrane of the respiratory passages. This expression in reference to the respiratory passages is employed advisedly, inasmuch as genuine croup is understood to be confined to these passages; it may extend to the fauces, but never, like thrush and diphtheritis, spreads to the mouth, the pharynx, or the œsophagus. These morbid conditions consist in the presence of false membranes of a greyish white colour, though sometimes yellowish or brownish, as is supposed, from colouring matter of the blood. These productions are most frequent in the larynx, though they are by no means confined to that structure; they extend, in many cases, into the trachea, less frequently they are found on the fauces, while, in a certain number of cases, the bronchial mucous membrane itself is affected. They bear some analogy to the false membranes found in inflammation of the pleuræ and of other serous membranes, but are nevertheless essentially different. Pleuritic exudations have a plastic or formative power, by virtue of which they become organized and may remain as fibrous bands or layers permanently attaching the costal to the pulmonic pleuræ. The false membrane in croup, on the other hand, has never been known to become organized; though it adheres firmly to the mucous membrane, the entrance of blood-vessels into its substance has never been demonstrated. The false membrane in pleuritic cases is essentially coagulated lymph, having the tough quality, the fibrous structure,

and, when treated with acids, the characteristic reactions of fibrine. The croupous exudation, on the contrary, seems more allied to albumen; it is very brittle, is destitute of the fibrous network, and shrivels up when treated with dilute sulphuric acid. If complicated with pnuemonia or bronchitis, the lesions resulting from these maladies will be superadded to those proper to the croupous affection.

The *treatment* of croup must be energetic, and should be adopted without loss of time. The great tendency to low fever entirely precludes bleeding, except in the very early stages. The animal should be kept in as equable a temperature as possible, somewhat elevated, and with a certain amount of moisture suspended in it, but without any impurity. Such a measure is much more beneficial than heavy clothing, which interferes with the motion of the chest, and aggravates the embarrassed respiration. Light clothing should, however, be adopted, and especially should the limbs be kept warm. The action of the bowels may be solicited; in the case of the carnivora; however, this may be advantageously preceded by emesis. This latter measure has been found highly beneficial in loosening and favouring the expectoration of false membranes. A warm bath often proves eminently serviceable in relaxing spasm, and in alleviating the general morbid condition. These measures may be followed up by febrifuge medicines, as potassio-tartrate of antimony, with the nitrate or acetate of potass, or the liquor of the acetate of ammonia, given in water, or, better, in linseed decoction. When the fever is of a typhoid character, and the powers of the system reduced, stimulants are urgently called for. Wine whey, sulphuric ether, or carbonate of ammonia, may be employed, along with mild aromatic and tonics, such as ginger or gentian.

Blisters may be applied early in the disease; they should be confined to the throat, unless there is attendant pneumonia. It is advisable to avoid the application of such agents to the trachea, as it may be requisite at a later stage to have recourse to tracheotomy, and the vascularity of the dermis which a blister induces, is calculated to interfere with this operation.

The employment of tracheotomy in this disease has been condemned as being liable to hasten a fatal result; there can be no doubt, however, that much of the prejudice against it has been owing to the cases in which it has hitherto been resorted to. It has been chiefly performed in extreme and advanced cases, to obviate, *pro tempore*, a fatal result, when that seemed imminent. Can we wonder, then, at the greater relative number of fatal cases after tracheotomy?

Local applications to the mucous membrane have likewise been employed. Delafond blew calomel through an artificial opening into the trachea. The same agent might be introduced by insufflation, and a traumautic lesion avoided in cases in which it is unnecessary to resort to tracheotomy. Powder of burnt alum may be employed in a similar manner. Perhaps the best application, however, is the nitrate of silver, employed in the form of solution, and introduced

into the larynx by means of a sponge attached to a whalebone probang, which may be actually introduced into the glottis. The solution in common use consists of 30 grains of the crystallized salt dissolved in an ounce of distilled water. These local applications at first produce a great amount of irritation, and paroxysms of spasmodic coughing of extreme violence, they nevertheless prove highly useful in many cases, by altering the condition of the mucous membrane, and bringing about a condition incapable of sustaining the peculiar exudation.

Cachexia Ossifraga—'The Stiffness.' Remarks on Communications by Messrs Thorburn and Sarginson. With a Plate. By JOHN GAMGEE, Professor in the New Veterinary College, Edinburgh.

AT page 82 of the present volume of the *Review,* I referred to the chemical constitution of the bones in this interesting disease of cattle. Several misprints unfortunately occurred, and I therefore reproduce my brother's observations and analysis. He says:—

"A quantitative analysis of the bones was made, the result of which is given below. No great deviation from the normal composition existed, as may be seen by comparing the analysis made by myself with one by Von Bibra, of the healthy femur of a bull. Traces of iron were found to exist in the bones, which was owing to their having been macerated in an iron vessel.

	Diseased Bone.	Healthy Bone (Von Bibra).
Organic constituents,.....	36·50	31·00
Phosphate of Lime, with a little Phosphate of Magnesia, and Fluoride of Calcium,.....	51·90	55·49
Carbonate of Lime,.....	9·80	12·71
Soluble Salts,.....	1·80	0·80"

In various parts of the continent of Europe considerable attention has been paid to this disorder; and in the 9th volume of the *Berlin Veterinary Magazine,* I find that Dr Kreuscher, of Bingen, has carefully examined the bones both as to their physical and chemical constitution. He refers to the cancellated structure having increased. and the compact bone becoming porous. The bony canals disappear. The bones contain much moisture, are light, and crumble. Their specific gravity he states as varying from 10 to 15 per cent. less than the bones of healthy animals.

ANALYSIS.

	Diseased Bones.		Healthy Bones.	
	Earthy substances.	Animal matter.	Earths.	Animal basis.
Femur, ...	32·50	67·50	60·02	39·98
Ribs, ...	30·00	70·00	57·49	42·51
Vertebrae and pelvis,.....	26·13	72·87	57·42	42·58

Of the earthy principles only 78 per cent. of phosphate of lime existed in the diseased bones, whereas 86 per cent. is the proportion in health.

Dr Kreuscher says that the food grown on lands where this fragility of bones exists is deficient in lime, containing from 20 to 30 per cent. less than on good soil. He refers to the disease as incidental to poverty of land and scarcity of nutritious food for stock.

Closely allied to this disorder is one referred to in the *Irish Farmers' Gazette,* of February the 2nd, and which consists in "cattle losing their hoofs and horns on particular soils."

"At the late meeting of the Dublin Chemical Society, Captain Thornhill alluded to the effect produced on cattle when grazed on particular lands in the Co. Meath, viz., the loss of hoofs, horns, &c. A similar case was brought under our notice as occurring in Co. Meath in 1843, which was published in the GAZETTE, vol. ii., p. 141, with Professor Davy's analysis of the soil, which we reproduce as follows :—

"SINGULAR ALLEGED EFFECT OF CERTAIN LAND IN THE COUNTY MEATH."

"A specimen of darkish, rich loam was forwarded to our office, by a correspondent with a statement, by which it appeared that cattle feeding on the land from which the specimen sod was taken, and on which we recognised luxuriant plants of cocksfoot and foxtail grass, are liable to lose their hoofs, and occasionally their hoofs and teeth ; nay more, that persons using potatoes grown on it not unfrequently lose their hair—save the ringlets of the fair from such land !—and even the nails of their fingers !

"All this appeared very unaccountable, and the wiser way, doubtless, previously to an endeavour to investigate these mysterious effects, would have been to ascertain their existence. We, however, submitted the matter to Dr Collins; Chairman of the Agricultural Committee of the Royal Dublin Society, and that gentleman, whose earnest desire to promote the extension of agricultural knowledge is so well known, requested Professor Davy to examine the specimen. The following is a copy of the professor's letter with reference thereto :—

"'Royal Dublin Society's Laboratory,
29th July, 1843.

"'DEAR SIR,—I have submitted to a chemical examination the soil and its dried grasses (cocksfoot and foxtail) from the county Meath.

"'The soil is a light one, of apparently good texture. It seems to have been recently limed, but the quantity of carbonate of lime in it is very small. It mainly consists of silex, alumine, oxide of iron and lime, with a little common salt.

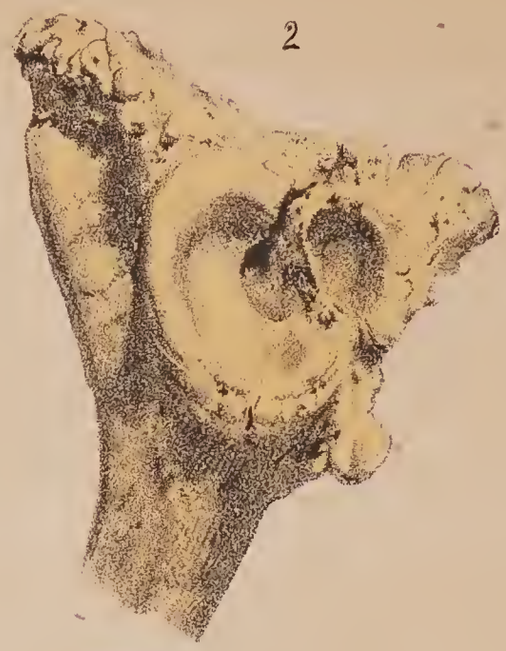
"'I have not been able to detect in it, or in the grasses on its surface, any noxious substance, whether earthy, saline, or metallic.

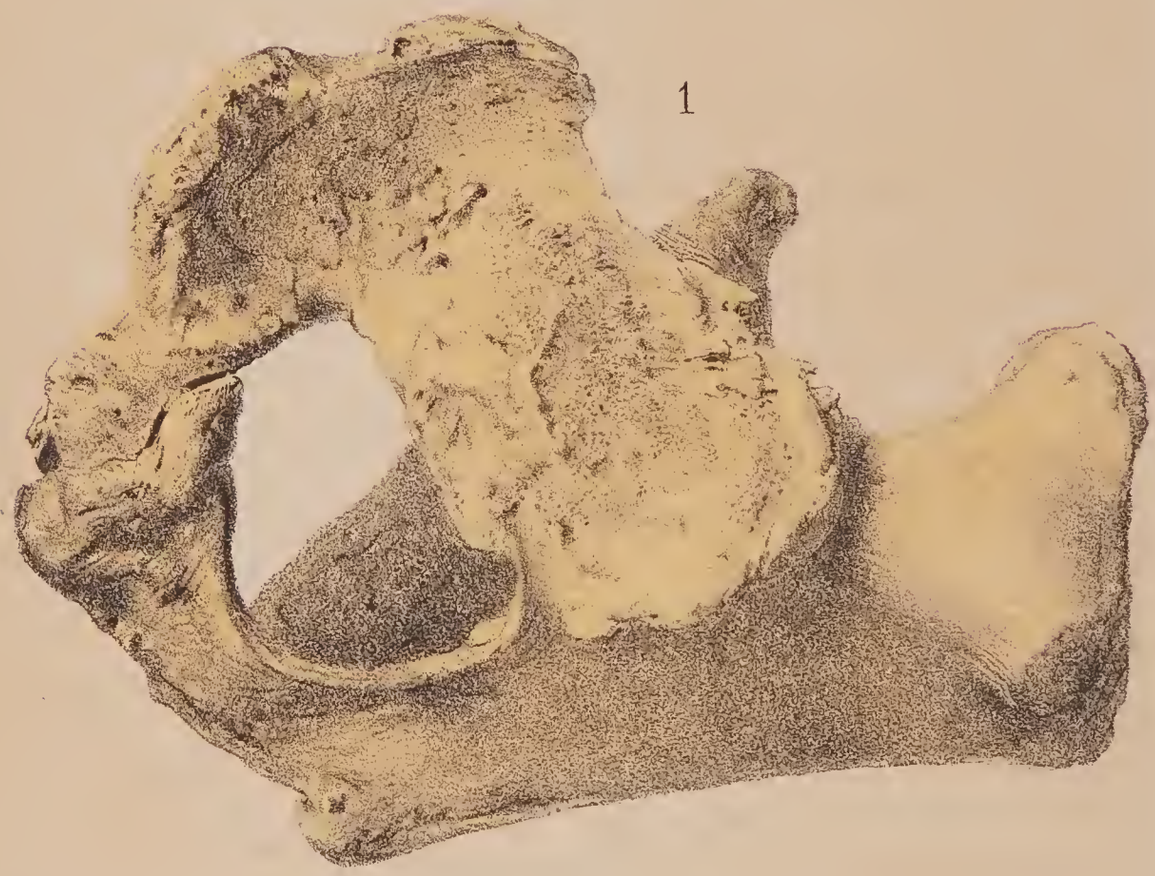
"'I do not think there is any real foundation for the opinion that the attacks to which cattle have been subjected on this soil are due to any substance existing in it or in its herbage. I beg to send to the Agricultural Museum a sample of the soil, and remain,—Dear Sir, Yours, &c.,

"'Robert Collins, Esq., "'EDMUND DAVIE.
"'Chairman of Committee of Agricultural Museum.'"

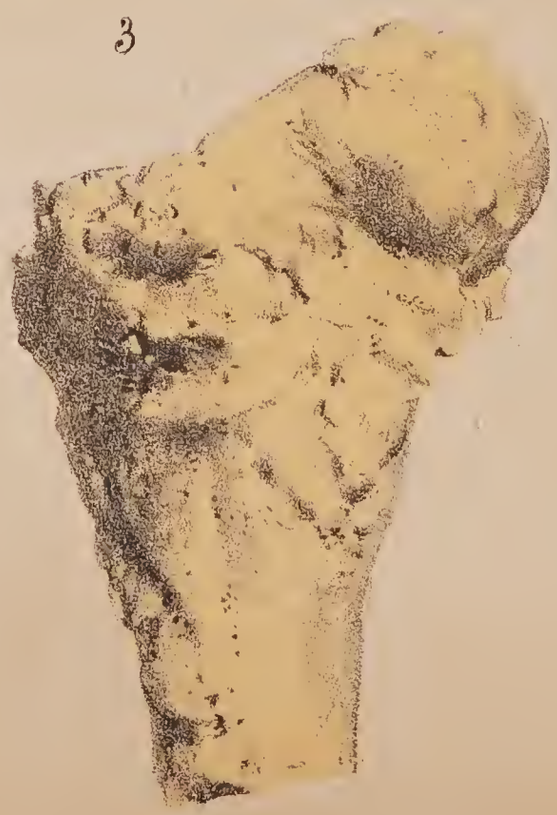
It is evident that the absence of lime in food is a powerful cause in inducing such diseases, and they are not due to any poisonous principle.

The annexed plate admirably represents the peculiar changes on the surface of the bones occurring during the disease. The periosteum





Stanton.



Fr Schenck lith' Edinburgh 50 Geo.St

becomes reddened, and the surrounding tissues often indicate blood extravasations. The compact tissue of the bones becomes softened, rough, and very vascular. The cancellous tissue is discoloured, filled with a bloody serosity, and cannot be easily distinguished from the altered compact tissue, except in spots. It is evidently the ends of the bones which undergo the change most rapidly; and pathological anatomy would teach us that this depends more on the facilities afforded by the vascularity and open texture of the ends of long bones than any special cause operating, in first inducing joint disease. Some authors have regarded the malady as rheumatic in the first instance, from the stiffness and joint swellings, but there is nothing to substantiate the presence of any kind of inflammation at any stage of the disease, and the system is rather in a condition opposed, than favourable to inflammation. From first to last the disease consists in osseous degeneration, coupled with a similar wasting of other tissues, but the absence of lime salts in the food directly impairs the chemical and physical constitution of the bones.

The cartilages of the joints suffer early, and as rapidly as the expanded bony ends which they cover. They simply waste, and bone rubbing against bone leads to a partial porcelainous deposit or eburnation of bone, which was well seen in the specimen drawn at Fig. 1, Plate II, where the lithographer has left, about the middle of the diseased acetabulum, some distinct elevations, which in the bones are composed of hard ivory-like texture. This irregularity in the distribution of the calcareous salts simply indicates nature's feeble attempts to make up for the deficiency of cartilage, and to check the rubbing down of the softened bone.

Structurally the bone varies largely from the normal compact tissue. The lacunæ are large and irregularly distributed. The lamellar arrangement around the Haverian canals is much interfered with, and the latter are widened and filled with the softened elements of bones, distended blood-vessels, and a discoloured exudation. It is on the irregularity of the changes and the peculiar liquefaction of many parts of the osseous texture that this disease varies from simple osteoporosis, which is seen in some countries in low-bred horses as a peculiarity rather of breed than dependent on the food they live on.

(To be continued.)

REVIEW.

—o—

The Meat Manufacture; a Practical Treatise on the Rearing and Feeding of Live Stock. By R. O. PRINGLE, Co-Editor of the *Irish Farmers' Gazette.* Dublin: William Robertson. 1861. Second Edition.

ONE hundred and thirty-six pages, octavo, closely printed and in a neat form, for the handy price of One Shilling. So mechanical are some people in their ideas of the worth of books, that we know of an instance in which a subscriber to a serial absolutely weighed the parts as they appeared, to ascertain whether he might be cheated as to quantity. The most fastidious would certainly find good reason to be thankful for Mr Pringle's shilling's worth. The quantity is good, and the quality is better still.

Veterinary surgeons cannot betray ignorance on the management of farm stock without their reputation suffering materially, and yet they cannot always obtain a handy book to prepare for observation when commencing practice. Mr Pringle's will supply this want, though it is destined chiefly for the farmer, and does not aim to instruct the agricultural student only, but to afford sound information for those of large experience.

However slight a sketch of the elements of aliment a practical man may care to read, yet he must benefit by some acquaintance with the nature of food, and this is supplied in the first twenty pages of the treatise before us. The constitutional peculiarities of animals are not altogether overlooked, though more attention is given to the history of the proximate principles of alimentary substances and the composition of natural and artificial materials used in the rearing and fattening of stock. In this section of his work Mr Pringle refers to shelter and ventilation in the following terms:—

"Insufficient house accommodation is a serious loss to the owner of cattle, entailing as it does an extra expenditure of food without an equivalent return; but how much greater is the loss in the case of those whose cattle are exposed during the entire winter without any shelter beyond that which is afforded by a hedge? When we see cattle on a cold winter's day

> 'Mourn in corners where the fence
> Screens them, and seem half petrified to sleep
> In unrecumbent sadness,'

we see a waste of material going on which is nearly as absurd as if the owner would wilfully undertake the office of the incendiary, and set fire to his hay-ricks. All cattle ought to be put on the approach of winter either into properly constructed houses or covered yards, where their food will be expended in promoting their growth and development, and not wasted in meeting the extra demand for animal heat-producing material which exposure creates.

"But there is in the construction of cattle accommodation one important essential to be attended to, namely, perfect ventilation, combined with an entire absence of cold currents of air.

"We have alluded to the change which takes place after the air has passed through the lungs, by which the amount of carbonic acid becomes greater than when first inhaled. If there is no means of escape provided, the carbonic acid will accumulate to such an extent as to be most prejudicial to the animals breathing an atmosphere which is saturated with it. It is, in fact, a deadly poison; and when we bear this in mind, we can have little difficulty in tracing to their true source many of those inflammatory diseases to which cattle confined in ill-ventilated houses are subject, and the origin of which often appears so very mysterious. A man consumes about a gallon of air per minute. 'A horse,' according to Boussingault, 'throws off daily forty-five pounds of carbon in the form of carbonic acid gas; and in the case of the cow, four-ninths of the carbon contained in the daily food is consumed during the process of respiration'—(Voelcker). This shows us how very soon the air in a closely shut-up stable or cow-house becomes vitiated, and rendered utterly unfit to support life in a healthy stnte. If, therefore, it is necessary to prevent waste of food by providing proper shelter, it is no less requisite to the healthy condition of the animals that the air which they breathe shall always be kept in a state of purity. Ample space should be secured over the heads of the animals, and hay-lofts and other obstructions to a free circulation of air ought never to be permitted. Ventilators should be inserted in the apex of the roof to permit the heated exhaled air to escape, and means taken to secure a constant supply of fresh air from beneath, without creating a thorough draught, the effect of which would be to check the perspiration, and thus lay the foundation for catarrh and other diseases."

We venture to think that our author might have advantageously extended his observations on feeding materials. His remarks are sound, but we would scarcely agree with him when he says, "Oats ought *always* to be bruised before being given to animals, as in this state the food is not only more thoroughly masticated, but is also much less liable to produce inflammation, which we often find to arise from the over liberal or inconsiderate use of the whole grain." We believe that young animals having the full power of their organs of mastication thrive best on whole oats, and the act of crushing, so essential from the necessary secretion of saliva, ensures the perfect digestion of principles. It is far from proved that the horse eating crushed oats assimilates more of them than when they are eaten entire. Moreover, we must draw Mr Pringle's attention to a fact which may appear slight, but which requires to be kept before the farmer. It is not *inflammation* which is so frequently destructive in horses. The disease so termed is colic, and the name is an important element, inasmuch as persons have adopted the practice of depletion to a dangerous extent in a disease which is very rarely inflammatory, and, we may say, having no tendency to run on to inflammation. It is contrary to many veterinary treatises and the opinion of the public, but it is none the less a fact, and important in itself, because it points to the method of treatment by evacuants what was formerly successful. Mr Pringle barely alludes to the subject, but we notice it, being strong advocates for proper names being given to the different diseases of animals.

As an instance of how Mr Pringle treats the various articles of food, we quote his interesting paragraph on Mangel Wurzel. He says:—

"The average composition of this variety of roots contains, in the natural state, 1·81 per cent. of flesh-forming substances; 11·19 per cent. of the elements of respiration and fat; 0·96 per cent. of ash—of which the largest ingredients are potash, soda, and common salt—and 86·04 per cent. of water. The orange globe variety has been found to contain a larger amount of the elements of respiration and fat than the long red, which agrees with the practical results obtained by the use of those varieties in feeding. The tendency of fresh mangels to produce scour when given to cattle is known to all who have used them, and also the fact that when the roots are kept over for some months before being given to cattle this scouring property disappears. It arises from a certain acrid substance which exists in the fresh root, the nature of which has not yet been clearly ascertained, but which gradually disappears after the roots have been raised and stored. The quantity of sugar contained in mangels which have been kept for some months is greater than in the fresh roots, for which cause also cattle thrive better on old roots than on those which have been recently drawn from the soil. The old roots become riper and sweeter, in the same manner as the apple or any other fruit becomes sweeter as it approaches maturity. Dr Voelcker states that he has found mangels 'to be about the worst description of roots that can be given to sheep.' In an experimental trial of different feeding materials, he found that whilst 'sheep fed on swedes and hay increased on an average 2½ lbs per week,' those fed on mangels and hay 'at the end of four months had not increased a single pound.' From this he infers that there exists some peculiarity in the constitution of sheep which prevents them from deriving benefit from mangels, whilst cattle thrive rapidly upon them. This is another point which requires co-operative investigation on the part of scientific and practical men, as we have met with cases which seemed to corroborate Dr Voelcker's views, whilst the results in others were diametrically opposite."

In the second chapter of his treatise our author speaks of calves with the intelligence and confidence of a man of experience. He is a great advocate for the unrestricted use of linseed cake, which we consider superfluous if calves have a sufficient quantity of milk, and, when ready to eat, can obtain good grass. His remarks on sago, Irish moss, wheat meal, and hay-tea are interesting, as attacking popular belief.

We regret that we cannot trace the subject through the various divisions under which it is treated by Mr Pringle, and we skip at once to the last chapter, 'On Farm Horses,' in which much sound instruction is given. A few lines, however, go far to mar the whole. The author says:—

"The proportion of raw turnips which is put into the boiler in the morning for each horse will be from 50 to 60 lbs, and this feed being cooked in time to permit its being cooled before the horses return from work in the evening, should be divided into two portions, one of which will be given as soon as the horses come in, and the other at eight o'clock, when they are 'suppered' and done up for the night. Linseed, at the rate of half a pound to each horse, is sometimes boiled amongst the turnips, but in this case the linseed should be put in a small bag and boiled, as it is apt to burn when merely scattered in a loose state through the boiler. A little salt, say three or four ounces for each horse, must be added whilst the turnips are being cooked, and as soon as the materials are thoroughly boiled, they are taken out and thrown into a trough, and allowed to cool slowly. Whilst long-established practice has proved the propriety of giving cooked food to farm horses, as a part of their daily diet, high veterinary skill has testified to the correctness of the principles upon which the system is founded; and from our own experience of its advantages we have the utmost confidence in recommending it to those by whom it may not have been adopted. The addition of a pound or

two of barley for each horse is a great improvement, particularly when the horses have been low in condition; but the barley must be thoroughly boiled. Beans and peas are also sometimes added to the turnips, and, boiled along with them, of course, assist in increasing the nutritive value of the cooked food. Such additions, however, may or may not be made, according as it is convenient, and as the circumstances of the case demand; but, at all events, farm horses should have a regular portion of cooked food given to them every day, from the time when the artificial grasses and vetches fail in autumn until the autumn-sown vetches or the earlier grasses are ready for use. Horses soon get very fond of oil-cake, and we have found very great benefit, indeed, from its use. It should be broken, but not ground into meal, unless in the case of old horses; and the daily allowance may be about 3 lbs. Bran is an excellent feed for horses, especially when given in the form of mashes. When horses are not allowed cooked food, it is necessary that they get bran mashes two or three times a-week, in order to correct the heating qualities of the oats and beans upon which they are fed."

Mr Pringle is clearly a better cattle feeder than horse keeper. His practices are carried out largely in Scotland, and much to Scotland's detriment. The horse's alimentary canal, and especially his stomach, was never destined for bulky, sloppy, boiled roots and grain. Whatever Mr Pringle may fancy, it is certain that such a system of feeding is quite incompatible with keeping horses in good condition, and also with keeping them economically. We do not object to a few raw roots daily, especially if horses get no hay; but the more strictly the farmer confines himself to oats, hay, and straw, in moderate proportions, the cheaper will he obtain his motive power, and the healthier will be his stock of horses. It is decidedly wrong even to give the abundant bran mashes which Mr Pringle recommends in the absence of the cooked food. Bran will accumulate in the large intestine of the horse, and produce sometimes the most serious colic. Indeed we must take serious objection to page 132 of Mr Pringle's book, inasmuch as he advocates the plan which, in Scotland, raises the mortality amongst farm horses to a frightful average, and out of every hundred horses that die annually about half die of colic. Our advice has been taken by many with the best results, and many of the best farmers are alive to the treacherous 'soft-meat system.'

In conclusion, we must state that Mr Pringle's book is, both in a scientific and practical point of view, an admirable Treatise on the Rearing and Feeding of Live Stock.

EDINBURGH VETERINARY REVIEW

AND

Annals of Comparative Pathology.

LADY CHESTERFIELD'S PIGS.

THE continuation of the correspondence on this unpleasant, but very important question, published at p. 243, reached us somewhat too late for convenient issue last month. We might, however, have made an effort to insert it, but for a hope that, by delaying, we should have the satisfaction of closing the discussion with a conciliatory communication from Professor Simonds retracting, or at least modifying his last letter to the Council of the Birmingham Cattle Show. This anticipation has not been realized, and that letter remains evidence of the want of temper of its writer,—a wanton insult to the body of gentlemen to whom it was addressed.

Mr Simonds appears to have wholly forgotten that the difficulty was, in the first instance, of his own creation. This fact was not of itself blameable, indeed it might have proved the reverse if his explanation had been substantiated. On the contrary, in the inquiry which was instituted, his own evidence broke down in consequence of a contradiction between himself and his professional colleague, and all independent testimony was diametrically opposed to his unsupported assertion, that he had protested against Lady Chesterfield's pigs in Bingley Hall, on the ground of age, and that his protest was over-ruled. Mr Simonds was invited to assist the Birmingham Council in a deliberation so nearly affecting the exactitude, if not the integrity, of its management, but he thought proper to decline; nevertheless still adhering to his impeaching statement. Under these circumstances, the Council, in self-defence, though with manifest reluctance, addressed the Professor a recapitulation of the facts of the whole question. Nothing would have been easier than to disprove the allegations if erroneous, but it is clear that, for the nonce, *proof* and *disproof* were not words in Mr Simonds' vocabulary. He waxed impatient with a growing sense of probable discomfiture in the issue he had raised, and gave the best evidence of weakness in loss of self-control. If either party have distinguished itself by

special pleading worthy of an Old Bailey advocate, it is certainly not the Midland Council. Let us trust that an amicable adjustment has not yet become impossible; but we confess we have only one solid reason for encouraging the hope,—that Professor Simonds may perceive that the question now pending is much more important than the one raised by his inconsistent conduct in pronouncing a different opinion on the age of the same pigs, within a few days, at Bingley Hall and in Baker Street; the question actually at issue is his character as a gentleman.

VETERINARY ETHICS.

If one circumstance more than another had to be adduced to prove that veterinary surgeons are not altogether what they ought to be, it is the peculiar position in which they find themselves when called upon to consult in difficult cases. We are largely improving, but the young practitioner meets with such an amount of prejudice and ignorance, that he must have abundant courage and determination to bear up against the buffetings and systems of detraction adopted by those of older generations.

Mr William Malcolm Reid, M.R.C.V.S., Leochel Cushnie, has evidently met with some of the old school, anxious to weaken his position. The narrative of the case is brief. A quey at the manse of Leochel Cushnie is suddenly seized with severe signs of illness. Mr Reid is called, and has the animal slaughtered, because affected with that incurable disease "splenic apoplexy." A second case occurs, and as doubts had arisen as to the nature of the disease in the first instance, Mr Sorley of Alford was, at Mr Reid's request, called in consultation. Mr Sorley arrives at the manse, delivers an opinion adverse to that of Mr Reid, has no consultation—asks Mr Reid no questions, but declares the latter wrong, and states that the cattle are dying from lead poisoning.

"Mr Reid then gave his friend Mr Sorley notice to come forward and defend his opinion, or else to enclose the *post mortem* appearance he expected to find in lead poisoning, and he (Mr Reid) would enclose the *post mortem* appearance he expected to find in splenic apoplexy, and let them be compared with the appearance of the body after dissection. But either of the above Mr Sorley uniformly declined. Mr Reid, however, enclosed the *post mortem* appearance he expected to find characteristic of splenic apoplexy, gave it past before putting a hand to

the animal, and offered to stand or fall by the result. If it corresponded with the appearance of the body after dissection, he would be allowed to be right; but if they were different, his own writing would be sufficient to condemn him. After dissection, however, on comparing every part and organ with Mr Reid's written description, they were found exactly to correspond, and signed by those present as witnesses that it was correct. One of the stomachs was also preserved, and several bottles sealed up, containing some of the contents of the stomachs and bowels and part of several organs in the body; and Mr Reid volunteers to bear the expenses if lead is found present in these by analysis."

Two letters will be found under the head *Miscellanea*, and we think their perusal is sufficient to prove the candour, honesty, and thorough confidence in his own judgment on the part of Mr Reid, which contrast very unfavourably for Mr Sorley, with the high sounding "fifteen years' experience;" and the extraordinary reference to a *flesher* and a *merchant*, as to the appearance of organs which Mr Sorley had denied himself the privilege of personally inspecting.

Why have not the organs been handed over for analysis? If they can be properly attested, and have been under cover, and sealed in the hands of trusty persons, we recommend Mr Reid to apply for them again in the interest of science. As he has been treated, however, in a very peculiar manner under trying circumstances, he should be cautious as to whom he does trust. Mr Reid's letter is dignified, and altogether worthy of his talent and intelligence. We need only turn our readers' attention to that letter, and state in conclusion that, so far as the discussion has gone, Mr Reid has to our minds clearly proved his correctness, and unmistakeably shown that Mr Sorley delivered an opinion hastily, and refused to support it by evidence.

INSPECTORS OF MARKETS.

THE owners of stock will learn, though perhaps late enough, that it is to their interest that the cattle markets of the United Kingdom should, as far as possible, be kept clear of diseased animals, and, in order to effect this, professional men must be appointed, and the example followed which has recently been set by the Court of Common Council for the City of London.

Mr Nice, a member of the Royal College of Veterinary Surgeons, has for long held the position of Veterinary Inspector at Smithfield, and the highly creditable manner in which he has at all times acquitted

himself in that capacity—though perhaps not severe enough at all times—has evidently led to the earnest recommendation of the Markets Improvement Committee, that "none but regularly qualified veterinary surgeons should be allowed to become candidates for the vacant office." The *Lancet* justly urges that the consignment of large quantities of diseased meat to the city markets should be prevented, and this can only be effected by our slaughter-houses, as well as the live stock markets, being under careful and intelligent supervision.

In Edinburgh the state of matters is simply disgraceful, and, like other towns in Her Majesty's dominions, will have to be forced into a line of well-doing by the metropolis, instead of taking the lead as it could so well have done. Aldermen have been shocked in the city of London at the sight of bad lamb retailed for 2½d. per lb. More than that can be seen here, for the produce of disease is often sold at the price of fair meat. Sickly lambs are dressed with the fat of well-fed sheep and sent to London, where all expenses are covered, and a profit realized on sales at 2d. or 3d. per lb.

The staggering ox, with profuse salivation and symptoms of fever, is allowed to stand in the public market by fresh young stock, which becomes contaminated, is sold and transmitted to some unsuspecting farmer, who probably has a large quantity of food to consume, but his bought-in animals are found to fail in their duties and lose flesh, though surrounded by abundance. This is no imaginary case, and sufficiently indicates the necessity for the separation of diseased from healthy animals exposed for sale. We need not allude to more serious instances in which fatal diseases are transmitted from carelessness on the part of those who manage the business of the markets.

UNQUALIFIED PRACTITIONERS.

We are happy to learn that a number of gentlemen practising, who are not yet members of the Royal College of Veterinary Surgeons, have made up their minds to seize the first opportunity to present themselves for examination. Many having been satisfied with a useless certificate, from ignorance of the true constitution of our profession rather than from well-guided choice, will have an opportunity, we believe, to pass a *practical* examination before the Board of the Royal College. This is a necessary concession, from the fact that many worthy practitioners who have been successful in their country duties have had little time to keep up that intimate knowledge of scientific

details, which as students they mastered for the purpose of an examination. They will, therefore, be treated as practitioners who desire to see the profession consolidated into a strong body, and who give up the suicidal policy of trusting to a piece of waste paper as a sufficient qualification.

If we earnestly urge all gentlemen above referred to, to communicate with Mr Gabriel, and send their seven guineas before the middle of April, we do so entirely in their own interest, and from the certain knowledge of the fact that ere long measures will and must be adopted to ensure, as far as law can ensure, very material privileges. In terms of our charter none but members of the Royal College can ever hope to claim the title, Veterinary Surgeon. It has been, all along, erroneously supposed that the Edinburgh certificate confers the right to the title V.S. Such is not the case, and our words may be substantiated in a manner not altogether pleasant to those who recklessly disregard the many warnings we have, as journalists, felt bound to give them.

THE VETERINARY PROFESSION.

It is our pleasing duty to draw attention to one of the most important papers ever penned on the constitution of our profession. A member of the Scotch Faculty of Advocates has perhaps stated in terms more telling for our Scotch veterinary surgeons than any that have hitherto been uttered, how dangerous is their position, and how favourable the present opportunity is for "a strong pull, a long pull, and a pull altogether." In that paper a person beyond the pale of our profession calmly and dispassionately weighs evidence as afforded by legal documents, and by the position assumed on the part of the teaching colleges. It is an impartial consideration of fact, and if any who may have thought it immaterial hitherto to consider their questionable position will rivet their attention for a short time to a lucid exposition by a cool and clear-headed lawyer, they must, we think, follow the advice given them in the foregoing article on "Unqualified Practitioners."

VETERINARY JURISPRUDENCE.

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IMPORTANT TO THE ANNUAL LET OF GRASS PARKS.

The case of dispute upon a breach of the conditions of the annual let by auction of Milfield Pastures, in the County of Northumberland, between Geo. A. Grey, Esq., the proprietor, on the one part, and Mr William Thompson, farmer, of Ryle near Whittingham, as the taker, in April last, of the eatage of certain grass fields upon the Milfield Estate, on the other part, has just been heard. The case having created an intense interest in the "pastoral mind" throughout the border districts of Northumberland, Roxburghshire, and Berwickshire, it is thought advisable, for the better guidance of public opinion upon the justice of the award of the sole arbitrator (Mr S. Donkin, of Bywell, Felton), to publish the merits of the dispute, with the gist of the evidence as elucidated at the two sittings of the Court of Arbitration—the one at Glanton on the 10th January, the other at Wooler on the 14th February—when, on each occasion, the Court was crammed by flock-masters and shepherds from the whole range of the Cheviots. The question hinged entirely upon evidence and facts to be deduced by practical men, involving no point of law; therefore, the legal acumen of the "long-robe" was wholly dispensed with, thus rendering the proceedings a little less piquant than they otherwise would have been, and admitting evidence, oral and documentary, not the less substantial in truth, yet which might have been caught in the subtle web woven by the quirks and quiddities of the juridical loom. Still the Court sat under the ægis of the law. A bond of arbitration, drawn up by William Forster, Esq., solicitor, Alnwick, made a rule of Her Majesty's Court of Queen's Bench at Westminster, and duly signed, armed the arbitrator with that authority which will seal his award with a finality that may be thought audacious by the epicures of the luxuries of litigation. In the conditions of the annual let of Milfield Pastures, now nearly extending to 900 acres laid down in the highest condition, regardless of cost, it is declared that "all unclean and diseased animals shall be strictly excluded;" and it was upon this clause in the conditions that Mr Grey alleged a breach of covenant had been made, by Mr Thompson having, on the 30th October, sent to the fields he occupied at Milfield 200 Highland ewes, pronounced by Mr Grey's shepherds to be scabbed and unclean. On the nature of this malady in sheep, let us consult the "Rural Cyclopædia," edited by the Rev. John M. Wilson:—"Scab, a loathsome and troublesome disease in sheep, analogous to itch in man, and to mange in horses and cattle. It is highly contagious and exceedingly mischievous, and always gives great annoyance upon a stock farm, and sometimes causes considerable mortality. It may originate in filth and poverty; and when once it gets among a flock, it is rapidly propagated by actual contact, and by the sound sheep lying upon the spots and rubbing upon the posts which have been touched by the affected. It generally first reveals itself to the shepherd by the sheep becoming so itchy as to rub themselves upon posts, or rocks, or walls, or any other convenient objects—a symptom which does not appear till about twelve days after the infection has been received; but it may, on examination, be detected much earlier by unnatural redness and floridness of the skin. It progresses from irritation to pustular eruption; and when the extreme itching and rubbing begin, the skin is already rough and dotted with hard pimples, and in a few days the pustules break, sores occupy their place, and scabs are formed; and in the further process of rubbing and exposure, the scabs are removed, the sores are aggravated and extended, the wool is denuded, maggots may begin to assist the horrible devastations of the *acari*, deep sinuses may be formed, and either incurable ulceration or total exhaustion may render speedy death inevitable. . . . . It is strictly a cutaneous and local disease, although, like other local complaints, it will seriously, and even fatally, injure the constitution, if not checked in its early stages. . . . . Every infected sheep should be removed from the flock as soon as dressed, and until there is a satisfactory proof of its convalescence. Even here, however, the anxiety of the farmer is

not at an end. The complaint is probably more contagious than any other that can be mentioned. It has often happened that after all the stock has been sold and replaced, the new comers have been speedily infected. This is occasioned by coming in contact with the fences against which the diseased sheep have been in the habit of rubbing themselves, the wool left on the posts retaining some of the eggs or larvæ of the vermin, and, of course, communicating them to the new flock. The prudent farmer should, therefore, cause all flakes of wool remaining on the hedges to be carefully collected, to remove all useless posts, and paint or tar the gates, or wash them with a solution of the chloride of lime, before he uses the same pastures again." Acari are minute insects which form, feed upon, and propagate scab in sheep, and mange in horses. Though no larger than the hole formed by the point of a fine pin, they burrow under the skin, irritate the flesh below it, and travel from place to place on the body, extending their devastations. "If one or more female acari," says M. Walz, "are placed on the wool of a sound sheep, they quickly travel to the root of it, and bury themselves in the skin, the place at which they penetrate being scarcely visible, or only distinguished by a minute red point. On the tenth or twelfth day a little swelling may be detected with the finger, and the skin changes it colour and has a greenish blue tint. The pustule is now rapidly formed, and about the sixteenth day breaks, and the mothers again appear, with their little ones attached to their feet, and covered by a portion of the shell of the egg from which they have just escaped. These little ones immediately set to work, and penetrate the neighbouring skin, and bury themselves beneath it, and find their proper nourishment, and grow and propagate until the poor animal has myriads of them to prey on him, and torment him, and it is not wonderful that he should speedily sink. Some of the male acari were placed on the sound skin of a sheep, and they, too, burrowed their way and disappeared for a while; and the pustule in due time arose, but the itching and the scab soon disappeared without the employment of any remedy." Without offering an opinion in this place upon the steps taken by Mr Grey to rid his estate of what his shepherds considered dangerous to surrounding flocks, whose owners, as it will be seen by evidence, would have removed them from Milfield had Mr Thompson's been suffered to remain, and would have held Mr Grey liable to damages, we may give a brief biography of the unfortunate "hirsel" from the "Braes of Balquidder" that, like Sampson's foxes, caused such consternation in the land of the Philistines. Mr Thompson, besides being an extensive sheep dealer, holds immense tracts of mountain sheep-walks in Argyleshire. The doomed flock, on arriving in Northumberland on the 15th Oct., were, as Mr Thompson admits, swarming with acari—badly scabbed. There were of the lot 480 ewes altogether. Though scabbed flocks are no phenomena upon the Cheviots, the West Highland mutton had to perform a sort of quarantine before an application of a remedy to their disease could be applied. That such a remedy was applied, we have evidence to show; but that the application of a remedy does not always imply a cure will be found to be the opinion of perhaps the largest stock farmer in Scotland, viz., Mr Cuningham, of the Tofts, Roxburghshire. But when doctors differ, who shall decide? Well, the 24 scores of ewes were in the last week of October "bathed" at Wandon, and on the 30th of that month 200 were sent to Milfield—the remainder to Lowlynn, where Mr Thompson also held grazings. A copious application of the elixir of the "bath" tub not improving the complexion of their fleeces, the "driver" obstinately observed a suspicious taciturnity upon the nativity of his charge when arrived at Milfield, while these Ishmaelites of the fold failing to ingratiate themselves into the graces of the shepherds "in charge of the flock," their exodus from the land of Canaan was immediately and unceremoniously resolved upon. In consequence of the expulsion of Mr Thompson's ewes from Milfield, on the charge of uncleanness, on the 5th November, Mr Thompson gave Mr Grey formal notice that on the rent, L.246, 14s., becoming due on the 1st December, he would withhold payment. It was then agreed to refer the matter to arbitration. On examination of the conditions of let, in the hands of the auctioneer, it was found that "the auctioneer is constituted sole judge of the auction, with full power to dispose of and determine

any dispute or misunderstanding, if any should arise out of this auction, between the lessor and lessees of the several grass fields, and that his decision in all cases shall be final, and not subject to review by any court of law." In the interim, Mr Thompson thought proper to pay the rent to Mr Grey, claiming L.133, 17s. 6d. for loss of pasturage, over driving, and inconvenience to stock. Mr Grey then gave the arbitrator notice that he "intended to sue Mr Thompson for having, on the 30th October, 1860, had certain diseased sheep upon Milfield, contrary to the form of the statute therefore providing, whereby he has rendered himself liable to forfeit L.20, and a further claim of L.55, 5s. for damage to be done to the future grass letting upon Milfield, owing to the fields taken by Mr Thompson having been stocked by diseased sheep, the same to be decided by estimation at the first sitting, or by adjournment, till a future re-letting may decide the loss claimed, as the Judge of this Court may see fit." Here were cross actions enough to bristle up the "horse hair" of a whole bar of briefless barristers—litigant cartridges that only required a little parchment friction to have caused an alarming explosion, but which will, it is to be hoped, be suffered to "go off" without any very serious loss to life or limb.

It is now time to enter the Court of Arbitration at the house of Messrs Frater, Glanton, with Mr Grey and Mr Thompson, each as their own counsel. "That the said persons, parties hereto, will produce all books, documents, vouchers, and papers in their possession, or power relating to the matters referred, at such time and place as shall be appointed by the said Samuel Donkin, and that they, the said parties and their respective witnesses, shall and will, at such time and place as aforesaid, submit themselves to be examined on oath by the said Samuel Donkin touching the matter referred and all other the premises. That if either of the said parties shall, by non-attendance, in the opinion of the said Samuel Donkin, improperly impede or delay his progress in the reference, he shall be at liberty to proceed *ex parte* after ten days' notice in writing to the party causing such delay or impediment as aforesaid." On opening the court, which was much crowded,

The arbitrator said that, in consequence of the responsibilities imposed upon him by the conditions of Let of Milfield Grass Parks, he was there to hear evidence upon a dispute that had unhappily arisen between Mr Grey, as the owner of these lands, and Mr Thompson, of Ryle, as the purchaser of the eatage or egistment of the same. However unpleasant or invidious might be his position, he had only one course to pursue—to well and truly try, and a true verdict give according to the evidence. The question was one solely of evidence, resting entirely upon circumstances that must be consistent and self-evident—upon facts requiring nothing but the application of common sense for their solution. The case having created a considerable degree of interest in the district, he had considered it more in harmony with the public feeling to declare this Court of Arbitration open, while he would rely upon the good sense of the public to observe that order and decorum which the case demanded. The arbitration bond entered into to have this question decided empowered him to examine witnesses upon oath, thereby investing it with a solemnity which he had no doubt would be scrupulously observed. Let the first witness on behalf of Mr Thompson now be heard. [We can only give a summary of the evidence, which, at length, would fill a volume.]

Geo. Brown, shepherd to Mr Thompson, saw the sheep properly bathed at Wandon. Delivered 200 at Milfield on the 30th Oct., three days after bathing, seven score of the worst were sent to Lowlynn. The ewes were badly scabbed previous to bathing. Wouldn't swear there were no scabbed ones on their arrival at Milfield. Has had much experience amongst sheep. Sometimes sheep will "break out" after bathing. Won't say that it's safe to put bathed scabbed sheep amongst clean sheep.

Wm. Pringle, shepherd to Mr Thompson, was at home at Ryle when the Milfield herd brought the ewes. Saw no scab amongst them. Swears they were clean.

John Hall, farmer, Biddlestone Edge, saw the ewes after they came from Mil-

field. Considered that they had been much overdriven at a loss of 2s. 6d. per head. Caught every sheep, and found them all clean. Sheep once properly bathed will not break out again.

John Bolam, farmer, Alwinton, saw the ewes on the 26th November. They were perfectly clean, and would have no hesitation in turning them upon his own hill. Never hesitates buying scabbed sheep, if got cheap. One bathing is a perfect cure, if properly done.

George Bolam, farmer, Fawdon, has bought scabbed sheep, and, after bathing, sent them to the hill with impunity. Would have had no hesitation in putting the ewes that came from Milfield amongst his own flock. If sheep are properly bathed they won't break out again, unless they had got a smit.

Robert Hall has charge of Callaly fields, where some of the ewes from Milfield were put. Never knew any of them scabbed. Recollects Mr Renner and Mr Cowen's coming to examine them, because they had got a bad name.

Thomas Shield, farmer, Broomhouse, Durham, has had very scabbed sheep. Always cured them by one good bathing. Never drove sheep more than thirteen miles in one day.

William Hunter, jobber, Thropton, has had past experience amongst sheep. If sheep are once properly bathed there is no danger of infection. Has bought scabbed sheep. Passed them from one hand to another. Told the purchaser to bathe them twice.

By Mr Grey: Advised the purchaser to bathe them twice because, as they were scabbed, they might break. There may be an occasional sheep that will break the second time.

William Rogerson, Fowberry Mains, called by Mr Grey: Knew Mr Thompson had sheep at Wandon. They were bathed. [Here Mr Thompson admitted the scabbed state of the ewes before bathing.]

George Hope, shepherd at Wandon, advised his master not to allow the ewes to come to Wandon, as they were so scabbed. Got no damage because there were no sheep near them.

Robert Robson, shepherd, Milfield: When the ewes came to Milfield, he asked the driver where they came from. He wouldn't tell. Asked where they had been. Was told they had come from Ryle. Knew they had'nt come from Ryle, he having been there lately himself. Told the driver they weren't clean. He said they had been unclean, but were well bathed. Wouldn't tell where they had been bathed. Said he was coming often to look at them for fear they broke out. Asked if I wouldn't be against bathing any that might break. Told him there would be no bathing at Milfield.

Cross-examined by Mr Thompson: Won't say they were scabbed when they left Milfield on the 5th Nov. Have had scabbed sheep on Milfield; during summer they were sent off. The owners met the sheep, and bathed them all over before they brought them back. Were away eight or ten days. Were only slightly affected. Did no injury on their return. Only about half-a-dozen simply smit.

Cross-examined by Mr Grey: Was ordered to take Mr Thompson's ewes away on the 5th Nov. Expected a man from Ryle to meet me on the road. Was told that my master had written to Mr Thompson to come and meet them on that day. Had orders to take the sheep all the way if nobody met me. Rested them only once on the outside of Ingram ground, by leave of the shepherd, who said the ewes were standing their journey well. That was near four o'clock. Left Milfield at four in the morning. When he got to Ryle after dark, the shepherd there said he didn't know the ewes were coming.

Thomas Robson, master shepherd, Milfield: Saw the ewes the day after they came to Milfield. Thought them unclean. Saw they had been lately bathed. The itch was't out of them. Pronounced them unsafe. No man can conscientiously say that badly scabbed sheep can be cured by one bathing. Never saw ten score of sheep so bad. Have bathed scabbed sheep thoroughly that have again broke out.

Cross-examined by Mr Thompson: Couldn't tell how long they had been

bathed, but thought them still unclean. Inspected four scores of the ewes at Ryle on the 24th Nov. Didn' take hold of any. Mr Thompson wished me to look at the others. Declined. Knows that Leicester sheep are more difficult to cure than Cheviot sheep.

George Young, shepherd, Ingram, remembers the ewes passing over Ingram from Milfield to Ryle. Allowed them to rest near the March. Did'nt consider the ewes tired. On the contrary, thought them fresh. Little Ryle is 4 miles from Ingram. The distance between Milfield and Ryle will be about 18 miles. Consider that distance too far for one day's journey. Sheep accustomed to the road would perform such a journey easier than those just off the pasture.

Cross-examined by Mr Thompson: Never knew sheep driven so far. Remarked "if the ewes are not cured they have been well bathed." Wouldn't say they were cured. Would have hesitated putting them amongst a hirsel of clean sheep. Wouldn't have put them into a clean field as cured.

Adam Robson, shepherd, Crookham, has known sheep break out after one proper bathing. Has always found individual sheep breaking out in a badly scabbed flock after bathing. No relation to Thos. Robson, Milfield

Cross-examined by the Arbitrator: Would consider clean sheep, in adjoining fields to sheep bathed for the scab, in a dangerous position, where gates and rails intervene.

Robert Robson, farmer, Sandy House, has had 50 years' experience amongst sheep. One bathing is not a certain cure for badly scabbed sheep.

Robert Duncan, shepherd, Yeavering, saw Mr Thompson's ewes pass Yeavering on the 15th Oct. Were sadly scabbed. From experience, has often found one application of the bath fail—gave proofs from Grindon, Trowburn, and Yeavering. Wouldn't have received such ewes after bathing.

George Johnson, shepherd, Lowlynn, recollects Mr Thompson's ewes coming to Lowlynn about the latter end of November. They were the same that had been at Milfield. They remained at Lowlynn three weeks and two days. Never saw them unclean. Had 120 at Lowlynn that came from Wandon. Two of them broke and bathed them again. Another looked suspicious. Showed that she had something. Told the man who took away the sheep to watch that ewe.

By Mr Thompson: Noticed the tups put to the ewes. The tups were clean six weeks after.

Richard Pringle, farmer, Abberwick, has had much experience amongst sheep. Never knew sheep properly bathed for the scab ever breaking again. Would have no hesitation in putting bathed scabbed sheep into a clean flock.

By Mr Grey: Would certainly watch sheep after bathing, that had been badly scabbed.

Adam Hindmarsh, shepherd, Newham, has bathed badly scabbed sheep and turned them amongst a clean flock for eleven months. Never broke. Sheep may break a second time when done by hands who don't know their business.

Documentary evidence was here admitted, Mr Thompson producing letters from Mr Thomas Elliott, Hindhope, and Messrs Swan, commission agents, Edinburgh.

Mr Elliott "has no hesitation in saying that the scab in sheep can quite easily be cured with one bathing if properly done." Messrs Swan declare "that, in consequence of the length of time that sheep are on the road, they get a heat in their skin which makes it necessary to bathe them, in order to prevent it getting into virulent scab. When properly bathed, however, it generally disappears, without deteriorating in any way the value of the stock."

Mr Grey put in a note from Mr R. Maddison, Wandon, saying, "when Mr Thompson's sheep were with me, they were very bad with scab, and were all bathed. A day or two after, there were ten score sent to your pasture, but I should think no one could say they were either clean or safe from breaking."

The Court adjourned at eight o'clock, having sat, with a short intermission, since ten a.m.

On Thursday the 14th Feb., the Court of Arbitration was opened at the Black Bull, Wooler. Mr Thompson had signified to the Arbitrator his inability to

attend, but the latter, seeing no reason why any obstruction should be put to the hearing of further evidence, requested that Mr Grey should come prepared with any witnesses he might desire to produce. At 11 o'clock the long room was densely crowded, when, after the Arbitrator had produced his credentials, and stated his readiness to hear further evidence,

Mr Grey said that he had a host of witnesses in attendence to combat the untenable theory laid down at Glanton, that scabbed sheep were safe after one bathing, and to show how far he was justified in the expulsion of the unclean stock.

The Arbitrator here produced the bill of ingredients used in the bathing at Wandon, which gave 1 lb. of tobacco to 32 sheep, and one wine-glass of spirits of tar per sheep.

Thos. Robson, shepherd, Milfield, declared that great dissatisfaction had been expressed by several parties who had stock at Milfield, at the intrusion of unclean sheep. Considered the bath too weak for sheep in such a condition.

Thos. Robson, assistant shepherd, Milfield, saw a lot of the ewes examined, and swears they were scabbed.

Gilbert Turnbull, Milfield, examined Mr Thompson's sheep, and found one unclean.

John Duncan, shepherd, Akfield, never saw sheep in a worse state. Saw them going to Milfield. Wouldn't have received sheep in such a scabbed state. One bathing won't cure.

James Macgregor, shepherd, West Newton, saw the ewes pass Newton in a shocking state. They had come that day from Whitton Edge, a distance of 18 miles. Would have used a stronger bath. Have bathed turnip sheep in the Lothians for Mr Thompson, who must have known that the bath was too weak.

John Thompson, farmer, Lanton, never knew sheep all cured by one bathing. Would have considered Mr Grey bound by the conditions to have sent the ewes away. Once took a field at Milfield ; found the stock he intended for it unclean ; gave the field up to his brother. Considered he would have infringed the conditions of the let to have sent his sheep even after bathing.

Wm. Smith, farmer, Learmouth, would have considered Mr Grey bound to remove sheep in such a state. Have used much stronger bath without effect. Would consider grass parks greatly injured by such ewes as Mr Thompson's remaining. Have had stock driven from his farm at Ilderton Dod to Learmouth, 18 miles. Have had Leicesters driven that distance without injury. Cheviot ewes will go further than any other sheep in a day.

Alex. Thompson, owner of Kirknewton, never in his experience found one bathing a perfect cure. Bathed a lot of his own wethers, and several broke again. Have had them to bath four times before a perfect remedy. Would have considered Mr Grey liable to damages for a breach of the conditions had he suffered the ewes to remain.

Here Mr T. S. Storey, of Elilaw, who, at Glanton, had admitted a partnership in the ewes, and who had taken a seat at the table, was informed by the Arbitrator that he (Mr S.) was at liberty to put any question on behalf of Mr Thompson. Mr Grey assented. Mr Storey declined.

James Thompson, farmer, Mindrum, had a field next Mr Thompson's at Milfield. Would have charged Mr Grey with a breach of covenant had the sheep remained. Scab is a serious complaint amongst sheep.

George Donison, shepherd, Reavely Greens, saw a lot of sheep belonging to Mr Thompson at Pennymuir fair last. Mixed North Highland ewes. Wouldn't swear that they were unclean. Quite against reason to say that one bathing will cure scab.

George Young, shepherd, Ingram, had a conversation with the Callaly herd, who had charge of part of the ewes sent off Milfield. Was told there was one unclean ewe.

Thomas Robson Scott, owner of Leatham, has had much practice amongst sheep. Never knew one bathing cure badly scabbed sheep. Would not send newly-bathed scabbed sheep to mix with clean flocks on the hills. Would have considered Mr

Grey highly culpable to have allowed these ewes to remain. Would have considered the conditions of let broken. It was certainly a long drive between Milfield and Ryle, but with due care sheep, habituated to the road for so many weeks, would receive no hurt.

Dr Marshall, Chatton Park, has had great experience amongst sheep flocks. Has had the misfortune to know what the scab is amongst large lots of sheep. Got it amongst some half-bred gimmers. Had them bathed by experienced men, and rebathed within a fortnight. Part were three times bathed. Would have considered Mr Grey highly responsible to other takers to have allowed these ewes to remain, and thinks Mr Thompson guilty of a breach of covenant to have sent such stock to Milfield.

Andrew Robson, butcher, Spital, Berwick: Have been a shepherd. Bathed scabbed sheep at Great Ryle with Mr Johnson. Put them amongst clean sheep, and they became infected.

Thomas Sanderson, shepherd, Ancroft: Once bathed blackfaced ewes at Scremerston that broke again. The Lowlynn herd said that two of the ewes from Wandon broke.

Edward Henderson, farmer, Lowick, knew from experience that one bathing won't cure. Had the scab for three or four years. Constantly bathed. Mr Forster, Screenwood, sent a man who would cure the scab, if anybody could. He came. Got his own way. Got peat water. Bought what ingredients he pleased. Bathed and cut up all the rubbings. Didn't get rid of it till twelve months after. The sheep were Leicesters.

John Lumsden, farmer, Learmouth, once bought some scabbed sheep, bathed them properly. Had them to bath again. Had grass fields at Milfield, and would have considered Mr Grey highly culpable to have allowed Mr Thompson's sheep to remain.

Thomas Hunt, farmer, Thornington, has taken grass fields at Milfield. Would have removed my sheep immediately had they adjoined the ewes in question, and would have come upon Mr Grey for damages. Have had lambs driven from Prendwick to Thornington in a day; and fat sheep from Thornington to Prendwick.

Robert Robson, shepherd, Thornington, has driven sheep from Prendwick to Milfield Hill in one day, and fat sheep from Thornington to Prendwick.

Charles Borthwick, farmer, Yeavering, from experience, has found one bathing ineffectual. Considers Mr Grey bound by the conditions to protect the takers of his fields from suspicion.

George Jamieson, shepherd to the Marquis of Breadalbane, has had great experience amongst scabbed sheep, and has had to re-bath repeatedly.

James Steward, farmer, Roddam, had grass fields at Milfield, and would have considered Mr Grey liable to damages.

Thomas Clark, farmer, Coupland, wouldn't have removed his stock, but would have immediately charged Mr Grey with breach of covenant.

Robert Robson, farmer, Sandyhouse, would immediately have commenced proceedings against Mr Grey.

James Short, farmer, Humbleton Buildings, heard the conditions at the let of Milfield Parks last April. Took grass; and on hearing of the intrusion of unclean stock, was preparing to remove his the very day on which Mr Thompson's ewes were driven off.

David Short, long shepherd to the late Adam Atkinson, Esq., from a very extensive experience, is confident that the ewes expelled couldn't be called clean stock.

William Jobson, farmer, Buteland, never but once cured scabbed sheep by one bathing, and he gave 1 lb. to the score over a lot of sixteen scores. Would not have put Mr Thompson's ewes amongst clean sheep, at any price, till a month after. Considers Mr Thompson infringed the rules.

Thomas Gow, land agent, Cambo, has frequently taken the responsibilities of letting grass parks. Would undoubtedly, without the least hesitation, have sent off such stock even without giving notice. Nothing would have influenced him

to allow such a nuisance to remain. No tenancy created by the let. Only the right of eatage or agistment.

Here the Arbitrator put a stop to any further examination of witnesses. He said such a current running in the same direction, without any attempt to stem it, was only a waste of time. He thought he had now got sufficient whereon to form an opinion upon the merits of the case.

Mr Grey was prepared, if the Arbitrator wished, to bring forward witnesses for another day.

A mass of documentary evidence was then submitted to the Court. The first was from Professor Simonds, of the Royal Veterinary College. Opinion on the case. 1st. The sheep were not fit to send to the grazings on the third day succeeding the application of the mixture named, as they were still in a diseased condition. Scab is an affection which is associated with, and owes its origin to, the existence of *acari* (mites) on the skin and wool. They are the cause of its extension in a flock. The creatures multiply by the deposit of ova in vast numbers, and no lotion of the kind employed would, by one application, destroy the vitality of the ova, together with the whole of the insects. To do this, even with more suitable agents, repeated applications are required. 2. The risk of infecting clean sheep was not removed by the bathing, for, as previously observed, many of the scab insects would still be left alive on the wool, and others, in a few days, would be into existence by the hatching of the ova. Hence it is self-evident the sheep would still be in a condition to allow of the acari travelling from themselves to other animals with which they were pastured. Opinion of Professor Dick of Edinburgh: The sheep were not in a fit state to be put in, or kept in the field. They were not secure from breakings out again. They were not secure against infecting clean sheep coming in contact with them. Mr Cunningham, of the Tofts: I am of opinion that Mr Thompson's grounds are untenable, inasmuch as the application of a remedy does not always imply a cure, and I am not a little surprised that a person of his experience should make such a statement as that "unclean or scabbed sheep *once* bathed are cured, and safe from breaking or infecting clean sheep." Such, certainly, is not the opinion of largely experienced sheep farmers, as evinced by their treatment of drove sheep coming on to a farm or pasturage, particularly if known to be unclean, they being carefully kept apart the other parks, bathed, and still kept by themselves for not less than ten days, when they are examined, and those that appear to require it re-bathed, never allowing any of them to mix with the general flock. Mr Forster, Screenwood: Scabbed sheep cannot be warranted as free from the disease for two or three weeks after bathing, and even then they are not to be trusted, unless every one found scabbed at the time of bathing be properly examined by a competent judge. If badly scabbed, I consider, to make them safe, they should be bathed a second time about two weeks after the first bathing. Mr John Ord, Muirhouselaw: I am decidedly of opinion that, in large lots of sheep where scab has appeared, one bathing will not effect a cure, and I consider it far from safe to put clean sheep amongst them, unless a considerable time has elapsed to test the efficacy of the application. It often happens that individual sheep amongst the lot bathed for scab have to undergo the treatment two or three times before they are completely cured. There were documents from several other experienced men to the same effect.

Mr Grey then minutely and carefully went over the evidence in defence of the steps he had taken to protect himself from the consequences to which he argued he would have been liable had he suffered the unclean sheep to remain.

The Arbitrator was persuaded that no man expected his verdict to-day. The evidence would require considerable analyzation. He would do his best to arrive at right conclusions out of the premises before him, and the public should have his award in due time.

The Court then broke up at three o'clock.

PERISCOPE.

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THE CONDUCT OF THE BIRMINGHAM CATTLE SHOW— LADY CHESTERFIELD'S PIGS.

(To the Editor of the Mark Lane Express.)

Dear Sir,—The Council of the Birmingham Cattle Show will feel obliged by your inserting the enclosed correspondence in your paper of Monday next.—I am, &c., John B. Lythall, *Secretary.*

Cattle Show Offices, 14 Temple Street, Birmingham,
Feb. 14, 1861.

Mr Lythall to Professor Simonds.

Birmingham, *Jan.* 31, 1861.

Dear Sir,—The Council of the Birmingham Cattle Show met again to-day, Mr Charles Mariott Caldecott in the Chair, and your letter of the 24th inst., requesting to know the evidence that had been taken relative to the pen of pigs, No. 155, was laid before them. I am instructed to give you every information on the subject, and to state the facts which induced the Council to approve of the resolution and letter that have recently appeared in the newspapers on the subject.

The question is, whether you and your co-referee, Mr Hunt, were at the last Birmingham Show over-ruled by the Stewards of the Yard, in your decision as to disqualifying the pen of Pigs, No. 155, as mentioned in the two letters which appeared in the *Mark Lane Express* on the 20th December last, one of which was signed with your name, and the other with the name of Mr Hunt.

In accordance with my instructions, I beg to inform you that the Council requested the personal attendance of yourself, Mr Hunt, and the Stewards of the Yard, at their meetings. You wrote to say you were unable to attend; but the other three gentlemen were present, and I will proceed to deal with each party *seriatim.*

The whole of the letters written by you were read to the Council, together with your proposed form of Report; and it is necessary that I should quote passages from them, for the better appreciation of the correctness of the opinions at which the Council arrived. In your letter of the 4th January, you say: "It seems to me that the Council should take no notice of expressions in the published letters, which are evidently of a hostile character: nor should they do more than confine themselves to a simple statement of facts. I said to Mr Hunt yesterday, that we must all co-operate, and thus divide the responsibility, and in this spirit you will see I have acted. By all means let nothing appear in the *Mark Lane Express* this week from the Council, beyond a mere notice that they will meet forthwith to investigate. You will gather that this view I hope will be acted on by my telegraphic message. Our friend of the *Mark Lane Express* has, by his bold spirit, done our cause great harm; but, nevertheless, if we act cautiously, no permanent injury will be sustained by any one, nor by the Society."

With this letter you sent the following document:—

"Proposed Form of a Report from the Council.

"The Council have to report that they have investigated the circumstances relative to Lady Chesterfield's pigs, and find that the age of the animals was duly investigated by the Veterinary Inspectors, and a private memorandum made of it in their note-book to the following effect: 'One correct; two younger.' The report of the Inspectors, however, was only verbally; and, it appears, also not so formally given as it ought to have been, and hence, being misunderstood, the animals were allowed to compete in their class, the impression conveyed by the report being that all the pigs had *young 'mouths,'* and not that they were not of the same litter. The Council cannot but regret that such an oversight should have occurred; and they have resolved that in future all reports of the Inspectors shall be made in writing, and handed in to the Stewards of the Yard before the Judges proceed to the performance of their duties."

The Council read this letter and proposed report with considerable surprise.

They were unanimously of opinion that the responsibility ought not to be divided as you suggest, but should be borne by the persons who were to blame; that it was the duty of the Council fully to investigate the facts of the case, and they unanimously declined to adopt the report which you, without hearing one particle of evidence on the subject, had prepared for their sanction.

You have now written to me for particulars of the evidence taken on the subject; but, considering that you framed a report without taking any evidence at all, the Council might reasonably have come to the conclusion that you deemed no evidence to be necessary preparatory to making a report.

In your letter addressed to me on the 5th January, written in reply to my note requesting to know the names of the Stewards of the yard referred to in Mr Hunt's letter, you say:

"The letter from which you quote was published by Mr Hunt, and not by me, and as such he is responsible to the public. I do not say this with any view or intention to shift responsibilities from my shoulders, for it is perfectly true that it was written from a copy I sent him. At that time the impression was strongly fixed in my mind that he was with me and the Stewards when the conversation, something to the following effect, took place: 'Here's a doubtful pen, two of the pigs are young.' 'Well, I suppose you will pass them?' 'That we shall see.' I have since learnt from Mr Hunt that he had passed away to other pigs at the time, and further that *the stewards* repudiate all knowledge of the matter. This is putting me into a very improper position."

The Council were at a loss to know why you wrote the first sentence in your letter, if you did not intend to shirk the responsibility of Mr Hunt's letter of the 20th December, and they regretted to learn that that letter was, in fact, written by you, as such a course of proceeding was, in their opinion, unusual, and calculated to mislead the public.

They considered, too, that Mr Hunt acted with great indiscretion in signing his name to a letter which was not his own.

The Council regretted that you were, as you remark, placed in a very improper position, but they had the satisfaction of knowing that no act of theirs had caused it.

In your letter to me of the 8th January, written in reply to a second note from me requesting to know the names of the stewards of the yard, you, after expressing your inability to attend at Birmingham, say:—

"I must refer you to Mr Hunt for the names of the yard-stewards, as he saw me in conversation with them; as I only knew Mr *J.* Lowe by name. As I have previously informed you, I was strongly impressed with the belief that Mr Hunt was in the pen with me, and hence you have an explanation of many of my remarks on this case."

As regards Mr Hunt, the Council had two personal interviews with that gentleman; he stated that the stewards of the yard were Messrs Henry Lowe and Thomas Burman (not Mr John Lowe, as mentioned in your last letter), and that he was not present at the consultation. He was requested to write a letter to the Council as to these points, and he subsequently addressed to the Council a letter, of which the following is a verbatim copy:—

"Edgbaston, *3rd January*, 1861.

"Gentlemen,—The yard-stewards that I referred to in my letter in the *Mark Lane Express* were Messrs *Henry* Lowe and T. Burman, and that Professor Simonds left me to confer with these gentlemen respecting the dentition of pigs in pen 155, and on his return I understood that the consultation had taken place."

As regards the yard-stewards, Messrs Henry Lowe and Thomas Burman attended the meetings, and positively denied that any consultation took place with them on the subject, and on the 8th January they addressed letters to the Council as follows:—

"Sir,—I beg to state most positively, that Professor Simonds did not consult me relative to the pen of pigs No. 155, exhibited at the last Birmingham Show, and that I never heard that there existed a doubt about them until after the show had taken place.—Yours obediently,

"To Mr Lythall." "Henry Lowe."

"Sir,—I can confidently assert that I was never consulted by Professor Simonds or any one else relative to the pigs in pen 155, and that I was not aware that they were objected to, until I saw the letters in the *Mark Lane Express*.—Your obedient servant,

"Mr Lythall." "T. T. Burnam."

From the foregoing facts, it became evident to the Council that Mr Hunt, not having been present at the consultation, could have no actual knowledge on the subject, and that your statement, that a consultation was held by yourself and Mr Hunt with the stewards of the yard, was incorrect, and unsupported by any one. It was evident also to the Council that you and Mr Hunt contradicted each other on several important points; for you state that Mr Hunt was present at the consultation, whilst he states he was not; and you state that the consultation took place in the pen itself, whilst Mr Hunt states that you left the pen for the purpose of holding it. Both of you could not by any possibility be correct in your statements.

The Council, therefore, perceiving that your statement was unsupported, that you and Mr Hunt contradicted each other, and that the stewards of the yard positively denied that any consultation was held at all, unanimously came to the conclusion that you were mistaken.

In your short note, which appeared in the *Mark Lane Express* of Monday last, you appear to think that the Council accuse you of wilful misrepresentation. Such, however, is not the case: the Council look upon the matter entirely as a question of memory, and are of opinion that you have forgotten the facts.

I trust that these particulars will convince you that the Council are right in their decision; but if you publish any letter on the subject, I hope you will publish this letter and my former one of the 17th instant, which appeared in the *Mark Lane Express*, that the public may be in possession of the views of all parties.—I remain, dear sir, your obedient servant,

James B. Simonds, Esq. John B. Lythall, *Secretary.*

Professor Simonds' Reply.

Royal Veterinary College, London, *Feb.* 9, 1861, N.W.

Dear Sir,—In the communication which you sent me by the instructions of the Council, I only find, besides extracts from my *own* letters, two notes from the yard-stewards, simply denying any knowledge of the affair relating to the pigs belonging to the Countess of Chesterfield.

Before replying to the entire case, I must request the Council to furnish me with the whole of the evidence brought before them—that is, with a copy of the questions put to *every person* examined, together with their several answers.

It is clear from Mr Hunt's published letter that important matters have been, up to the present, withheld even from us, the inspectors, who have the deepest interest in the question.

Although the time has not arrived for me to reply to the statements which are made, I cannot refrain even now from remarking that I am surprised to find a public body descending to a form of special pleading which would do no credit to the meanest Old Bailey advocate.—I am, dear sir, truly yours,

Mr Lythall. James B. Simonds.

Mr Lythall to Professor Simonds.

Birmingham, *Feb.* 14, 1861.

Dear Sir,—Your letter of the 9th instant, addressed to me, has this day been read at a meeting of the Council, C. M. Caldecott, Esq., in the chair.

I am directed to say in reply, that no important matter whatever has been withheld, and that the conclusion of your letter is couched in terms that must prevent the Council holding any further correspondence on the subject.

My letter to you of the 31st of January, your letter of the 9th instant, and this communication, will be published, that the subscribers and exhibitors of the Birmingham Cattle Show may be acquainted with the facts of the case.—I am, dear sir, your obedient servant,

James B. Simonds, Esq. John B. Lythall, *Secretary.*

ON RED-WATER IN CATTLE.

By George Poyser, V.S., Ashbourne, Derbyshire.

[Premium—The Gold Medal.]

(*From the Journal of Agriculture*, March, 1861.)

Red-Water, a disease affecting members of the bovine tribe, is a convertible term for foul water, black water, &c. It has been called by a name which, to the professional man, indicates more of its nature, if not its true pathology. This is a compound term, employed first by the talented and esteemed lecturer on Cattle Pathology at the Royal Veterinary College of London, to designate a disease so variously named in different parts and provinces of our empire.

That *hæmo-albumen-uria* is a very descriptive and comprehensive term, will, we think, be gleaned from the following remarks :—

Hæma, the blood; hæmatosine, the colouring matter of the blood.

Albumen, from the Latin albus, white. It is constituent of the blood.

Uria is from the Greek, denoting the act of urination, and its compounds indicate the abnormal action of that function.

By *hæmo-albumen-uria*, we therefore understand a diseased flow of urine, in which albumen and hæmatosine, in some form or other, are constituents; but to make clear the ideas we entertain of the pathology of this disease, we consider it necessary to make a digression from our subject into the nature and formation of blood. Blood is a fluid circulating through the animal frame, carrying with it the powers of support, secretion, restoration, regeneration, and heat. It is capable of maintaining in any media in which an animal may be placed a temperature of 99° Fahrenheit. Its specific gravity is greater in robust and male, than in feeble and female animals, by reason of its containing more solid matter. It is red in the vertebrated, and colourless in the invertebrated, except in some cases of earthworms. It requires a more complex digestive system for its production from vegetable than animal food.

It will be needless for us to trace the process of blood-formation beyond the commencement of the lacteals. According to the researches of Professor Goodsir, of Edinburgh, after the chylification of the food has occurred, the epithelial covering of the mucous membrane of the intestines is removed, by which the looped and pointed ends of the lacteals come in direct contact with the chyle to be absorbed. This process is doubtless effected in obedience to endosmotic laws and capillary attraction. In the lacteals, chyle is found to be an opaque, white fluid, containing fatty matter, oil globules, albumen, numerous molecules of granular matter, and possessing a saltish taste, and an alkaline reaction. After it has passed the mesenteric glands, it appears to possess all the properties of blood except colour, and to have become vitalised by its contact with those organs—viz., it will clot, separate into its constituents, and yield to other tests; thence it goes direct to the right side of the heart, to take its part in the important function of augmenting animal life.

But as Lewes, in his *Sea-Side Studies*, very aptly remarks,—"We are erroneously accustomed to consider blood as the final stage of food, previous to assimilation. Physiologists trace the story of digestion up to this point, and there leave it, as story-writers leave their heroes married, thereby indicating that nothing more remains to be said. But just as marriage is the beginning of a new act in the drama, and the act in which all life culminates, so is this blood-formation but the commencement of a new series of changes, and these the most important. I think it can be shown that the blood itself is not more immediately and directly assimilable than a mutton-chop," or a truss of hay, "from which it may be formed." He adds, "that in its passage through the walls of its vessels, it undergoes specific changes, fitting it for assimilation; without such changes it is not assimilable; blood as blood nourishes no tissue, but lies on it like any other foreign substance, which must be got rid of by reabsorption into the veins, as when we see a vessel ruptured and the blood gets deposited in the parenchyma."

Serum of blood is found to be composed of water, albumen, and soluble salts.

The *clot* contains fibrine and red and white corpuscles.

Of water we need not speak.

Albumen appears to us to be the most important component of blood; it is to this substance that serum owes the property of coagulating when heated. It is the starting point of all development, evolution, and growth. It is the chief constituent of animal tissues, especially integumental and epithelial ones, and the basis of whole series of peculiar organs, especially those that are the seat of vital actions. It is the active constituent in the early stages of fœtal development, the essential element of corpuscular and cell-formation (because it is nearly identified with the contents of cells), and the real regenerator of the animal frame. Its origin is in the plastic constituents of food; and it appears to be analogous to, if not identical with, vegetable albumen, and convertible into fibrine of blood, and fibrine and albumen of flesh.

The salts of the blood are composed of the carbonates and phosphates of potash and soda, the alkaline earths (lime and magnesia), iron (oxidised), and common salt (chloride of sodium.)

These incombustible constituents are of great importance in the animal economy. They are acquired by the animal from the food it obtains, and it has been proved by repeated experiments of eminent physiologists that animals, fed on a single or a mixed diet, from which these incombustible ingredients had been extracted, soon exhibited all the appearances of starvation, and are utterly unable to support life. These salts are essential to the processes of digestion, assimilation, respiration, and secretion; and it is by their presence that the plastic constituents of the blood receive oxygen, and are rendered tributary to the process of nutrition and the production of animal heat. It is on the presence of a free alkali, or an alkaline salt in the blood of all animals, that the solubility of its fibrine and albumen depends; consequently the fitness of blood for the sanguification of the tissues, and the maintenance of all vital phenomena.

Fibrine is that constituent which causes blood to assume a solid form when drawn from the veins of an animal. It makes a mesh or network that envelopes the corpuscles in the clot. It is thought by some to be a more highly-developed form of albumen—in other words, to be albumen elaborated and vitalised, and so to stand next for appropriation into the tissues. Its property of settling in a solid form has been thought by some to be a vital endowment, and by others to be its death, or *rigor mortis*. While, on the other hand, some have gone so far as to consider it as an effete material, which, instead of standing next for appropriation into the tissues, is in process of elimination from the system, and that it has reverted to the blood from a waste of tissue, or has arisen from its own decay.

We confess that to us the latter conclusion appears infinitely more plausible. The arguments we find in favour of it arethese:—That fibrine is constantly increased by inflammatory actions, under many circumstances of exhaustion, weakness, and inanition, during the progress of starvation, although in some of the latter conditions it seems to have lost some of its density.

(*To be continued.*)

Recueil de Médecine Vétérinaire, 4th Series, Vol. VII. Nos. III.–VI. 1860.

V.—Some Reflections on Veterinary Obstetrics. By M. Caun, Veterinarian at Thoriguy-sur-Vire.

In this paper M. Caun especially addresses himself to the consideration of a peculiar obstruction to delivery after the anterior extremities and the thorax are extruded from the vulva. This obstruction consists in the posterior limbs being brought forward into the pelvis in such a manner, that their apposition to its walls completely prevents any further progress in delivery. In a solitary case only has M. Caun found the feet intruded into the pelvic cavity, and thus obstructing the passage of the croup; in all other cases, the faulty position con-

sisted in the bending forward of the thighs, so that the stifle rested inside the brim of the pelvis, the feet being at the same time in contact with the abdominal walls immediately beneath the pelvic margin. In either case, traction employed upon the vertebral column could only have the effect of pressing the feet or stifle more firmly against the brim of the pelvis, and jam up the passage more completely, while no progress whatever could be made in delivery. In such cases delivery may sometimes be accomplished by performing a semi-rotation of the fœtus, so as to bring its feet towards the loins of the mother; in this position the point of apposition for the stifle and feet no longer existing, the limb can in general be straightened, and the obstruction to parturition overcome. At other times, and more especially is this the case when the fœtus is dead, the calf may be bisected through the loins, and the anterior part removed; cords may be placed on the pasterns of the hind legs, and the posterior extremities once more pressed back into the uterus; traction on the cords being at the same time exerted on the cords, the hind limbs are presented, and the posterior extremities are delivered in this manner. In the one case in which the feet were within the pelvis, and brought into firm apposition to its floor, the body of the fœtus was pressed back some distance, so as to relax the tension, and the limbs brought forward as far as possible, so as to obviate the angle of the hock, after which, by equal traction upon all four limbs, the calf was expelled. In this last case some veterinarians advise cutting into the abdomen, and removing its contents. This proceeding is almost entirely repudiated by M. Caun, on the ground that the abdomen, if healthy, is by no means bulky, while, by pressing forward upon the diaphragm, and causing expansion of the chest, which is already extruded from the vulva, it is still further reduced, according to the necessities of the case.

VI.—Eversion and Amputation of the Uterus. By M. Genee, Veterinarian at Dol-de-Bretagne.

This is the record of a successful operation for the removal of the uterus, a somewhat formidable operation, but one which has been occasionally had resort to both in England and on the Continent. The subject in this case was a two-year-old cow, in a very low condition of health. M. Genée first saw her three days after parturition, in consequence of eversion of the uterus, which had taken place several hours prior to M. Genée's seeing the animal. The organ was reddish-brown, thickened, and covered by cotyledons so well developed, that they seemed as if only twenty-four hours after parturition. The uterus was supported by two men on a towel, a napkin passed over it, to prevent its being torn. Its return was effected, and the vulva closed by several stitches. Six days later, M. Genée was again called, and found the matrix once more everted; it was still swollen to a most unnatural size, the cotyledons covered by a grayish crust, dry and cracked, from its contact with the air, separating under the smallest pressure, and exhibiting beneath a suppurating surface. The organ was bathed with decoction of mallow, and efforts made as before to return it. During this operation laceration of the organ took place, allowing the escape of nearly a pint of limpid serum, and of a clear yellow clot weighing about eight ounces. The peritoneal surface, thus exposed, presented marks of inflammation, the serum and the clot being a production of that membrane. Under these circumstances, excision of the uterus was decided on. Clams made of willow were employed, about an inch in thickness, and nearly nine inches long, fixed together by strong cords at each end. This was applied over the vagina close to the vulva, and allowed to remain for six days, the noxious odour being kept down by appropriate lotions. After the amputation of the uterus, the lips of the wound suppurated healthily, and cicatrised in the course of twenty days. The creature having been previously unable to rise, was now able to get up. About this time the hip-joints became the seat of considerable tumefaction, and a portion of skin over each sloughed off, leaving suppurating wounds. Afterward the cow improved greatly in condition, and had on one occasion at least showed signs of oestrum.

VII.—Chloride of Lime in the Treatment of Gangrenous Wounds. By M. Moisant, Veterinarian at Chateaudun.

M. Moisant's remarks in the paper before us are highly favourable to the employment of chloride of lime in all varieties of wounds in the lower animals, whenever these may be threatened by gangrene, or even when gangrene has already commenced. The agent is applied by means of tow, which is first spread out in a thin layer, covered with dry chloride of lime, rolled up into pledgets, and introduced into the wound. These pledgets must be brought into contact with all parts of the wound, in order to insure a favourable issue, and accordingly it is necessary, in some very deep lesions, to introduce the tow rolled round the end of a flexible rod, in order to permeate the whole. When this has been properly done, we are informed that a favourable result is insured, unless the injury already sustained is so serious as to compromise the life of the animal. After the application of the agent, the temperature of the part rises in a great degree, much chlorine is disengaged, and even several days after application a strong smell of chlorine is evolved on the withdrawal of the dressing. After this dressing has been applied for three or four days, the wound exhibits under a blackish liquid debris beautiful granulations, on the surface of which a healthy suppuration takes place, and healing goes on as in any simple wound. The great object would seem to be the bringing of the agent fully into contact with all parts of the wound. M. Moisant acknowledges that in certain severe cases he employed more powerful antiseptic solutions prior to the application of each dressing.

VIII.—Carbuncular Fever in the Sheep, (*Sang de rate* of Authors). By M. H. Dulac, Veterinary Surgeon and Sanitary Inspector at Bayneres-de-Luchon.

M. Dulac stands forward in this article as a champion of that opinion which considers the splenic apoplexy of the sheep as essentially of a carbuncular character. A summary of the symptoms he has generally observed in this disease are given, followed by the *post mortem* lesions. On being attacked, the animal leaves off feeding, wanders from the herd, has quick, laborious respiration, with hanging head, rolling eyes, and beating of the flanks. The animal stands unsteadily, tumbles in walking, falls backward, has convulsive agitations of the limbs, dark purple, frothy blood is ejected from the mouth and nares, the conjunctiva is very red and injected; a small quantity of coloured urine is expelled, and the animal dies in the course of five, ten, or fifteen minutes. He has observed that the more vigorous animals are the first to fall victims.

In the autopsy there are found injection and coloration of the areolar tissue and mucous membranes, especially of the alimentary canal, the mucous membrane of which is sometimes detached in patches. There is sometimes sanguineous effusion into the spaces between the coats of the intestines, and into the peritoneum. Liver almost always sound; spleen greatly enlarged, engorged with black, thick, tarry incoagulable blood, and breaking down into pulp under the slightest pressure of the fingers. The heart and blood-vessels contain blood of the above-named character, and the pericardium and pleura show spots of ecchymosis. Urinary organs healthy; cerebral meninges sometimes ecchymosed, and in some rare cases effusion into the ventricles, or dark spots in the brain substance. The blood, whether obtained from the heart, lung, liver, spleen, large vessels, or from effusions, bears the same character; it seems as if the fibrine had lost the power of approximating its molecules, so that it remains in suspension, or is precipitated without consistency at the bottom of the vessel. Sometimes the blood disengages gas the moment it comes into contact with the air; altogether "the blood is changed in its physical, chemical, and physiological properties, the nature of this alteration being as yet unknown except by its constant effects."

It depends, according to M. Dulac, on emanations diffused through the atmosphere, attachable to the forage, inappreciable to physical and chemical tests, but exerting on the animal constitution a pernicious influence.

Three cases are recorded in which malignant pustule in the human being followed contact with the bodies of sheep dying of this disorder. One of these

occurred on the arms of a girl who had been employed in stripping the wool from the skins of such animals; one upon the arm and one upon the cheek of two men who had some days previously skinned sheep dying from this malady. These cases are each supported by an appeal to the physicians who attended the persons suffering from the malignant pustule.

Lengthy extracts from various eminent medical authors are given, to show that malignant pustule has always been looked upon as a consequence of infection caused by contact with the bodies of animals dying of anthrax. Among these are MM. Fabre, Nelaton, Lisfranc, Grisolles, Momuret, Fleury, and Nysten.

IX.—Use of Egyptiac in Traumatic Arthritis. By M. Mottet, Veterinary Surgeon at Soissons.

Egyptiac having been formerly recommended in the above injury by two practitioners, MM. Verrier and Benjamin, M. Mottet was led to make use of the agent in an extremely unpromising case of traumatic lesion of the hock joint in a mare; and, contrary to his expectation, a cure was effected. The injury was of some standing; the hock was much swollen, from the large amount of plastic exudation, and from the inflamed condition. So tender was it, that the least pressure produced the most exquisite suffering, while for six weeks it had not been put to the ground, the animal always lying on her side. The articulating fascettes and the ligaments were found to be inflamed, and the discharged synovia contained white corpuscles.

The ointment was applied upon the ulcers, some of which were enlarged with the knife for this purpose, and a little was injected dissolved in a small quantity of wine. A pointed hot iron was likewise applied to the wounds on certain occasions. Under this treatment the wounds were closed in fourteen days, and a month later the patient returned to gentle work.

Egyptiac consists of 14 parts of honey, 7 parts of strong vinegar, and 5 parts of verdigris, heated until dissolved and brought to the consistence of an ointment.

In the following month is a letter from M. Verrier, who was the first to advocate this mode of treatment, in which he says, that he considers this agent to be possessed of an antiphlogistic action upon inflammations of the synovial membranes, which action is possessed by no other agent, and which he designates *abortive*. He looks upon it as incontestable that under its influence the more characteristic symptoms of inflammation rapidly disappear; pain, heat, and swelling are quickly diminished, and a healthy action induced. Verrier has noticed this in a great number of cases in which fortuitous injuries of the joints have been received, and also in those in which the synovial membrane had been cut into for the purposes of experiment. The letter is concluded by the report of a case in which, after many other measures had failed, and in which the malady was gradually becoming aggravated, the employment of egyptiac led to a speedy and continuous improvement.

X.—Practical Remarks on Twisting of the Uterus in the Cow, and on its Treatment. By M. Chambon, Veterinarian at Montargis.

This paper is a continuance of the remarks of M. Chambon, published in the January number of the *Recueil*, and a summary of which will be found in the February number of the *Review* for the present year. The present, which is the concluding contribution on this subject, is made up of the report of seven cases, treated according to the method laid down by this author. Of these cases four were successful, while three proved fatal, from the lateness at which M. Chambon was called in, or from other circumstances interfering with the proper application of his system. In one case death resulted from too violent pressure being exerted on the uterine walls, which were thereby torn. The violent measures adopted in this case were necessitated by the want of sufficient space in which to perform the process of rotation. In one case the uterus was restored to its natural position by acting simply on the fœtus, in a sense inverse to the twisting. The calf in this case made a struggle, and the cow strained actively at the same moment, so that the abnormal position was obviated with the greatest facility.

XI.—Wounds of the Œsophagus Caused by Kicks. By M. Dillon, Ex-Veterinarian-in-Chief to the 13th Regiment of Artillery.

This is the report of two cases in which a lesion of the œsophagus was sustained in connection with injuries received from the kicks of other horses. In the first case the inflammatory swelling was treated by appropriate local and general antiphlogistic character. In three days fluctuation was observed over the seat of the tumour, and on its being opened, a quantity of blood and an amount of very landable white pus made its escape. All appeared well so far, but on a drink being given to the patient, the water escaped freely by the opening. Two openings into the œsophagus, of about four inches long, were discovered, and these it was thought might be closed by continued pressure. Accordingly, pledgets of tow covered by turpentine were retained upon the wounds by means of a linen bandage round the neck, and the diet was restricted to fluids only. Matter still continuing to escape by the wounds, an artificial œsophagus, in the shape of a caoutchouc tube, was introduced into the injured part, and this, as well as the lips of the wound, maintained in position by sutures. No better result followed this method, and it was resolved to introduce fluid aliments through a tube into the stomach until the œsophagian wounds were closed. As this was objected to in higher quarters, the animal was destroyed. The autopsy showed a tendency in the margins of the wounds to a healthy cicatrisation.

In the second case similar symptoms appeared as the result of the injury. There was a painful circumscribed inflammation, with œdematous enlargement of the neck from the parotid to the chest. This was treated by antiphlogistic measures, local and general, but on the tenth day unmistakeable symptoms of the escape of alimentary matters into the cellular tissue, and on the thirteenth day the patient died. The autopsy of this case showed an enormous collection of alimentary matters outside the œsophagus, arranged in layers, interspersed with pus, and bands of areolar tissue, and surrounded by walls of thickened and indurated cellular tissue.

These injuries are caused, according to M. Dillon's view, by the blow being received on the œsophagus while a pellet of food is descending, the hardness of which lead either to the direct rupture of the walls, or to an injury of such a nature as leads to their subsequent destruction or perforation. He considers, further, that his unsuccessful cases may serve as beacons to those who may afterward observe this injury, and lead to the adoption of more beneficial measures.

XII.—Treatment of Articular Wounds. By M. Rault, Assistant Veterinary Surgeon to the 1st Chasseurs.

Under this head is reported an unsuccessful case of the treatment of a penetrating wound of the left knee by the use of egyptiac. Under the use of this agent the synovial secretion became purulent, and the wound closed, but inflammation and engorgement continued, attended by lameness, with the occasional formation of small abscesses. After twenty-four days' treatment, despairing of a favourable termination, the animal was destroyed.

The joint was enormously engorged, and firmly retained in a semiflexed condition; the ligaments were very much thickened, and some of them nearly cartilaginous; two small fistulæ communicated with the two lower joints of the carpus. In these joints the articulating surfaces of the bones were dry, and their cartilages of encrustation nearly ossified, while no trace of a synovial membrane was observed. The radio-carpal joint was normal. While granting that this agent has the power of promptly diminishing the flow of synovia, M. Raulet looks with suspicion on the unqualified laudations with which it is introduced to our notice, but defers his remarks to a future occasion.

XIII.—Case of Secretion of Milk in a Young Filly. By M. Graiot, Veterinary Surgeon at Moreuil.

This is a remarkable case of congenital development and activity of the mammæ. The filly was well formed, and in perfect health and spirits. The

mammæ and teats had the size and appearance we might expect in a suckling mare, and a considerable secretion took place. The milk resembled that of a mare newly foaled, and might be drawn away to the amount of some ounces several times a day. The volume of the glands, as well as the amount of milk secreted, gradually decreased, and in twenty-four days this last was almost entirely suppressed. Six days later, however, a few drops could still be obtained from the teats.

Journal des Vétérinaires du Midi. January, 1860.

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I.—Clinical Report of the Imperial Veterinary School of Toulouse. (Quarterly Report for January to March, 1859.) By M. Serres.

These notes of M. Serres are not to be looked upon in the light of simple reports of the *clinique* of the school, but rather as distinct monographs on the sporadic diseases most prevalent at the time; in these papers, the value of various therapeutic measures are stated, according as they have been found beneficial in the practice of the college, while at the same time the report must be succinct, in consequence of the limited space allowed in the journal for this purpose.

1. *Laceration of the Eyelids.*—These are lesions of very frequent occurrence, and mostly affect the upper eyelid, on account of its greater mobility and more extensive exposure to vulnerary agents.

They may be recent or of long standing. In recent wounds there is an insignificant hæmorrhage; the flap of the lid turns in on the eyeball, which becomes irritated and inflamed, by the contact of the eyelashes more especially; the resulting pain leads the animal to rub the affected part on surrounding objects, which gives rise to a still greater degree of inflammation and tumefaction of the lips of the wound. If the laceration only affects about a fifth part of the lid, the tumefaction of the lid and the surrounding irritation is seldom very troublesome; cicatrization takes place readily, and no very noticeable blemish remains. In cases with a more extended wound, the effects are more troublesome, the flaps are introverted upon the cornea, and considerable tumefaction both of the wound and of the cornea results, with impaired or abolished vision. In this case, if no remedial measures are adopted, the edges of the wounds cicatrize separately, and unsightly flaps are left, with a great tendency to turn in and cause irritation of the conjunctiva.

The prominent indication is to bring the lips of the wounds together, so as to cause adhesion. For this purpose various agents are adopted; stripes of diacylon plaster have been tried, but often fail to retain the lips in apposition; *sutures à pointes passés*, and glover's suture have also been employed, but generally leave a ragged cicatrix. The quilled suture has been found most applicable, it retains the lips of the wound in most perfect apposition, generally leads to union by first intention, and produces a regular cicatrix. When there is much inflammation, the approximation of the margins of the wound is more difficult, and adhesion takes place irregularly,—in some rare cases not at all. In such cases, the margins should be made more regular, and the infiltrations incised before bringing them together. In all cases, refrigerating lotions may be usefully applied, and, as a matter of course, the animal must be carefully fastened, so that he cannot injure the wound by rubbing it against any object.

In wounds of some standing, similar sutures are indicated, after having pared the margins of the wound, to give them the power of cicatrization. When this cannot be attained, a part of the flap, more or less, may be incised, the want of which is much less injurious than the constant irritation of the cornea by its presence, and inversion.

2. *Idiopathic Parotitis.*—This affection occurs chiefly in young animals, and is not generally troublesome, its common terminations being resolution, or suppuration. Its first symptoms are stiffness of the head, with heat, pain, and tumefaction of the parotidean region; the appetite and spirits are still preserved, and there is no sympathetic fever. At this time the malady is most easily treated,

while in the more advanced stages there is a strong tendency to suppuration. When an abscess has formed, at about the tenth or fifteenth day, the severity of the symptoms disappears; some infiltration of the skin at the lower parts of the swelling takes place, and fluctuation can be distinctly perceived. After a greater or less lapse of time, according to its depth, this abscess points, destroys a considerable amount of skin, and leaves a large ungainly wound. The pus is generally laudable, and when caused by the presence of a foreign body, that is thrown off along with the pus. When none of the lobules of the gland have been destroyed, cicatrization takes place readily, but when these are more extensively affected, this process goes on more slowly, and there not unfrequently occurs a salivary fistula.

In reference to treatment, it is of some importance to learn, at the outset of the disease, whether it arises from the presence of a foreign body in the centre of the gland, or from external injuries of the nature of contusion or compression. In the former case, the inflammation would commence in the substance of the gland, and extend outward, while in the latter the external parts of the gland will be first affected. When arising from a strange body in the parotid, the stenonian duct will be tumefied and painful, while its orifice in the mouth is red and swollen; when from an external violence, there will be a more rapid progress of the case, and in many cases there will be marks of external injury.

In the case of a foreign body, the therapeutic indication is to favour the formation of an abscess, so as to hasten the escape of the irritant. Vesicants will often greatly facilitate such an occurrence.

In the parotitis from external injuries, local refrigerants may be employed for twenty-four to forty-eight hours, when, if the symptoms still continue in all their intensity, emollients and anodynes may be employed. Should suppuration prove imminent, it should be favoured as in the first instance, and as soon as its presence is ascertained, a free exit should be afforded, to prevent injury to the glandular lobules. If deep-seated, it is recommended to open by means of a trochar or bistoury; if superficial, opening by the cautery is advised. When a salivary fistula succeeds such a condition, it may generally be promptly closed by the application of a blister over the orifice, as recommended by Reynal.

II.—Pica Pellagra (in the Ox). By M. Dupont, Veterinary Surgeon at Bordeaux.

Pellagra has long been known to the physician as a curious and fatal malady, occurring as an enzootic in certain parts of Italy, Spain, and the south of France. In the article before us, M. Dupont furnishes an elaborate account of the same disease, as seen in the bovine species in Gascony. According to M. Dupont, the pellagra, as occurring in cattle in those districts, is very similar in symptoms and progress to this malady, as occurring in the human species. A prominent symptom in both is, the depravation of the appetite, and, on this account, the writer has, in the case before us, superadded the term pica, as indicative of this symptom.

Three stages of the disease are noticed—the first being chiefly characterised by a gradually increasing emaciation, with some derangement of the mucous membranes or skin, especially towards the end of this period: the second stage is characterised by the extensive affection of the skin and mucous membranes: whilst the third is marked by nervous symptoms.

In the first period,—which generally lasts a year, in animals bred in the district, and about eight months in those imported,—there is, along with the low condition, a serious loss of appetite, and an almost complete refusal of water. Rumination is nearly suspended, and the fæces are dry, black, and in small amount. About the eight month the skin becomes thick, dry, and adherent. The coat stares, and general sensibility is reduced. The mucous membranes are pallid, as in anæmia, and the pulse small.

On the occasion of the second period,—which generally lasts about two months, the skin and mucous membranes become more visibly affected. Depillation

takes place over the neck and shoulders. The depravation of appetite is well marked. Early, too, in this stage, the papillæ of the tougue are observed to become atrophied, and the buccal mucous membrane becomes very dry, harsh, and hot. The pulse at this time numbers 100 to 110. This condition becomes rapidly aggravated, the emaciation advances, the skin, and especially that covering the fore extremities, becomes covered with scaly patches, the eye is sunk in the orbit, and the appetite is almost gone. The pulse gradually increases to 150, and there is occasional trembling of the limbs.

During the third stage, the febrile symptoms continue, but to these are superadded great nervous excitement, the animal throws himself against the manger, strikes his head violently on all surrounding bodies, seizes wood or other agents in his mouth, scrapes with his feet, and cries for whole days in a dragging voice. There occur stages of quiet, but these are soon cut short by a recurrence of the furious paroxysms. This period generally continues from eight to fourteen days, and the creature dies in the agonies of intense cerebral excitement. Before death, a fœtid diarrhœa not unfrequently takes place, the papillæ have almost disappeared from the dorsum of the tongue, and the limbs are more or less engorged.

As regards the etiology of the disease, M. Dupont considers several agencies as conducing to it—1st, Geological formation of the land ; 2nd, Faulty conditions of diet and regimen; and 3rd, Influences of climate.

The soil is a siliceous gravel, containing a small quantity of humus, but without any calcareous constituents. This lies on an impervious subsoil composed of a kind of tufa, so that the rain water descending easily through the surface soil, and carrying some vegetable matter along with it, remains stagnant on the surface of the subsoil. This causes during winter a cold and humid condition of the atmosphere, and during summer, favouring as it does rapid and complete evaporation of the water, intense heat, a condition equally unfavourable to health.

The water being chiefly or entirely that carried down by the rains, and stagnating on the surface of the subsoil, undergoes injurious changes, and becomes, according to M. Dupont, a slow poison to the economy.

The fodder is given in insufficient amount, and from its growing on the impoverished soil is of bad quality.

It generally consists of bad hay, and the straw of the rye or of maize.

The stables are in general of the worst description, they are badly lighted, worse ventilated, and in a most filthy condition.

The climate as already stated is extremely variable. During the winter the atmosphere is humid and cold ; during the summer it is more than usually warm. At one time it rains incessantly or with alternate mists for several weeks, so that the whole district may be said to be submerged. At another time the ground is perfectly parched, and the rays of the sun being reflected from the sand the heat is intense. By this combination of circumstances, M. Dupont considers that the disease may be satisfactorily accounted for.

The anatomical lesions are, complete depillation of the skin, which is brown, covered by ecchymoses, and by deep cracks. The membranes of the brain are strongly injected, and contain a large quantity of serous effusion. The same may be said of the spinal cord, the effusion and the injected condition of the meninges being most noticeable in the lumbar region. The medullary matter, too, at this part, is generally softened. The thoracic organs are generally healthy. The stomachs are much reduced in size, and contain the most out-of-the-way articles which the depraved taste of the animal has impelled it to swallow. The omasum is hard and unyielding, its contents breaking down into powder on being touched.

The intestines, like the stomachs, have their cavity greatly diminished, their mucous membrane is thick and infiltrated, with the epithelium mostly detached, and are covered by brownish patches. The other abdominal viscera participate in the general atrophy.

The treatment of these cases is only efficacious in the first stage : the malady may be arrested by removal from the district to one in which animals are not liable to it: it may also be cut short by improving the hygienic condition of the dwellings, by filtering the water through charcoal and lime, and by giving

nourishing green food in the summer, and roots in winter; to these diets other agents such as oil-cakes may be beneficially added.

Young animals are little affected by the malady, which attacks preferably those in which the system is reduced by hard work and imperfect aliment, so that the chief indications are to remove the animal from all debitilating influences.

MISCELLANEA.

DISEASES OF CATTLE.

As every agriculturist and cattle-breeder must be interested in whatever affects the health and management of live stock and of the several diseases which prove most fatal to them, we do not consider it out of place to observe an interesting case of a very fatal disease, occurring some time ago at the Manse of Leochel-Cushnie. On Monday, 7th inst., Mr Wm. Reid, V.S., was called upon to attend a quey that had suddenly become ill, belonging to the Rev. Dr Taylor. On arrival, Mr Reid gave it as his decision that the animal was affected with splenic apoplexy, and gave orders to get it slaughtered immediately, as the meat was as yet unaffected. But on the animal being dressed, some doubts arose in the mind of the flesher and those present concerning the correctness of Mr Reid's statement; and had not another opportunity for decision presented itself, he was sure to have undergone the rough catechism of the attendants to the public. But, on the succeeding night, to Dr Taylor's great misfortune, another animal became affected, and, on the following day, Mr Reid stated that the animal was labouring under the same disease. But in consideration that he had been rewarded for his former decision in doubts and whispers of unbelief, he requested that another practitioner should be consulted. Mr Sorley, V.S., Alford, was accordingly called in, who gave a decisive opinion that the animal was under the effects of lead poisoning, and immediately left before his professional brother had an opportunity of meeting him. The disease, however, soon put an end to the animal's sufferings, and a *post-mortem* examination was the only course left of settling the question. Mr Reid then gave his friend Mr Sorley notice to come forward and defend his opinion, or else to enclose the *post-mortem* appearance he expected to find in lead poisoning, and he (Mr Reid) would enclose the *post-mortem* appearance he expected to find in splenic apoplexy, and let them be compared with the appearance of the body after dissection. But either of the above Mr Sorley uniformly declined. Mr Reid, however, enclosed the *post-mortem* appearance he expected to find characteristic of splenic apoplexy, gave it past before putting a hand to the animal, and offered to stand or fall by the result. If it corresponded with the appearance of the body after dissection, he would be allowed to be right; but if they were different, his own writing would be sufficient to condemn him. After dissection, however, on comparing every part and organ with Mr Reid's written description, they were found exactly to correspond, and signed by those present as witnesses that it was correct. One of the stomachs was also preserved, and several bottles sealed up, containing some of the contents of the stomachs and bowels and part of several organs in the body; and Mr Reid volunteers to bear the expenses if lead is found present in these by analysis. He is further to report these and similar cases in the April number of the *Edinburgh Veterinary Review*, where he will meet the members of his profession on open ground, and will be happy not only to meet any remarks that may be made on these cases, but also to discuss any cases of lead poisoning in the domesticated animals that may be brought forward.

(To the Editor of the Aberdeen Journal.)

Sir,—In reference to an article in your paper of last week, headed "Disease of Cattle," I beg to state that I was called to see a stot, belonging to the Rev. Dr Taylor, of Leochel-Cushnie, on the 9th of this month. After examining the symptoms, &c., and having been told that another beast had been similarly affected, I gave it as my opinion that the animal in question was suffering from the effects of

lead poison, many cases of which had come under my notice in the course of a fifteen years' practice of my profession. I also beg to state that I have two letters in my possession—one from Mr William Milne, flesher, Alford, who has been in the habit of killing beasts weekly for the last ten years, and who killed and dressed the animal first affected, in which he says that he found the spleen in a sound and healthy condition; the other letter, from Mr Williams, merchant, states that he was present when the second animal was opened and examined, and that in it also the spleen was found in the usual healthy appearance. With the above proof against Mr Reid's *decision*, as to the cases being splenic apoplexy, and with the fact that red lead was found within reach of the cattle in the shed where they had been standing, and that the mouth of one of them was coloured with it, I think I may leave with safety the public to judge betwixt Mr Reid's *decision* and my opinion, as to the disease with which the animals were affected. I do not consider the article alluded to worthy of further notice, as it sufficiently evinces the spirit in which it was written.—I am, &c., Robert Sorley, V.S.

Alford, 31st January, 1861.

(To the Editor of the Aberdeen Journal.)

Dear Sir,—In reference to a paragraph appearing in yours of the 30th January, headed "Diseases of Cattle," regarding which I observe a few remarks from Mr Sorley, V.S., Alford, in the *Herald* of last week; as Mr Sorley is understood to treat but one side of the question, I hope you will have the goodness to grant me a small space for reply. With regard to the said paragraph, I may state that it was the truth and nothing but the truth; simply the plain statement of a plain question. Such a fact Mr Sorley himself has not attempted to deny.

But after informing us of the many cases that have been set down by him as lead poison during a practice of fifteen years, he contents himself by quoting a few remarks to establish his opinion. Firstly, he informs us of letters he has from two persons who saw the bodies of the animals after dissection (certainly not very high authorities on the subject.) One of them, however, is right; the other, I can show to be wrong, if he chose to allow me. Secondly, he informs us that marks of red lead were observed on the animals' bodies while in health; but, I not having heard of such a statement previously, he perhaps knows himself where he got his information. Thirdly, I would remind my friend, Mr Sorley, that the animals had not access to a large quantity of lead, but only the faint traces of a small amount could be discovered, while the largest possible quantity considered to be on the premises at all being altogether insufficient to produce death, or very alarming symptoms, if given at one dose to an animal not near the size of either of the two under consideration. But as this is not the proper place for the discussion of such subjects, I shall at present lay them aside, and will hope that another opportunity will be afforded me of showing the weight and importance of such a foundation in another channel. Meanwhile, I would remind my friend, Mr Sorley, that something more professional is necessary for him at present than to content himself with hear-says and the report of others. I consider that it would be doing myself, as well as the public, a great injustice, did I not ask Mr Sorley to defend his opinion, while I have, and am ready, further to confirm mine. But when a professional man refuses to meet his brethren, either on practical or scientific ground, he would induce some to believe that he was in the possession of something more than a clear head and long experience.—I am, &c.,

William M. Reid, V.S.

Leochel, Feb. 4, 1861.

OBITUARY.

We regret to announce the death of Francis Adams, of Banchory, which took place on the 26th of February. We shall furnish, in our next Number, a brief history of the life and writings of the most learned of Scottish physicians.

EDINBURGH VETERINARY REVIEW

AND

Annals of Comparative Pathology.

ORIGINAL COMMUNICATIONS AND CASES.

Case of Fatal Parturient Hæmorrhage in a Cat. By Graily Hewitt, M.D., Physician to the British Lying-in Hospital, and Lecturer on Midwifery at St Mary's Hospital Medical School.

The history of the animal, the subject of this observation, was not known antecedent to eight months ago. Since that time she had inhabited the house of the author. The cat was considered to be old, those familiar with the animal judging this to be the case from the fact that she experienced difficulty in eating bones and hard substances, apparently from worn-out state of the teeth.

During the last eight months the cat had been pregnant, exclusive of the present occasion, twice; on one occasion giving birth to four kittens, only one of which lived more than one day, and on another, after a tedious labour, giving birth to three kittens.

On the evening of February 24, 1861, the animal was again taken in labour, and one kitten was found born on the following morning. During the 25th, the cat was restless, uneasy, and lost from time to time a considerable quantity of blood, moving from one place to another and seeking relief. In the evening, two more kittens were born. The cat was left with her kittens at night, and on the following morning (the 26th) she was found in the basket dead. A considerable quantity of blood, the source of which was evidently the uterus, was also found in the basket. The author had heard nothing of the cat's condition until informed that she was dead. On examining the body a few hours after death, it was found rigid, the limbs and thorax attenuated to a great extent, but the abdomen still much distended. The posterior extremities of a kitten projected from the vulva. On opening the abdomen the uterus was found to contain three kittens, one was partially delivered, one occupied the lower part of the uterus and a portion of its right horn, and a third was altogether in the left horn of the uterus. There was a placenta, detached, in the right horn of the uterus; the placenta of the fœtus in the left horn was also disconnected from the uterus, and it appeared as if there had been recently an escape of blood from the uterus at

as if there had been recently an escape of blood from the uterus at this point, although no coagula of any size were found there. The thickness of the uterus at the junction of the two horns was apparently less than it should be, judging from a comparison which the author had instituted between it and some preparations of the pregnant uterus of the cat in the Hunterian Museum, but the difference was not anything very considerable in amount. Under the microscope the muscular fibres of the uterus at this point did not present any evidence of fatty degeneration. There was considerable congestion of the vessels supplying the right horn of the uterus, but less on the other side.

The omentum contained much fat. There was a considerable collection of fat also around what may be called the brim of the pelvis.

Remarks.—It does not appear that accidents during parturition in the lower animals have attracted any great amount of attention, in this country at least, although the subject is one of very considerable interest. The few remarks which suggest themselves in reference to the above case may not therefore be misplaced. In the human female, hæmorrhage, during parturition, is one of the most serious complications the obstetric practitioner has to encounter. This hæmorrhage, which—thanks to the advances obstetric knowledge has made in latter times—is generally, under proper medical supervision, controllable, proceeds from the vessels which pass from the mother to the placenta. The cause of the hæmorrhage in question is very different in different cases. The most common cause of hæmorrhage during, or previous to the commencement of labour, is attachment of the placenta in an unusual position, viz., at and partially over the orifice of the uterus. This part of the uterus is necessarily dilated to allow of birth, and the placenta is thus detached, and the bleeding takes place. This separation of the placenta gives rise to bleeding, because the uterus cannot at that spot contract, and thus close the mouths of the vessels, owing to the distention by the fœtus. Again we have hæmorrhage occurring from separation of the placenta, when it is not situated in this unusual position, and the bleeding may or may not show itself outwardly. In the first series of cases—cases of placenta prævia, as they are called—the hæmorrhage is said to be *unavoidable*. In the second class of cases, it is said to be *accidental*. And of the accidental form there are two varieties. In one form the blood flows out of the uterus and appears externally, in the other the blood does not so escape, but is retained in the uterus, between the uterus and the placenta, the placenta being more or less completely detached.

The safeguard against hæmorrhage in the parturition of the human female, is contraction of the uterus. By the contraction the opposite walls of the utero-placental vessels are brought into contact, and the effect is as if a ligature had been placed upon them. But if, owing to the presence of the child, the uterus cannot sufficiently contract to

close up—to ligature—these vessels, blood must continue to be poured out. Normally, the connection between the uterus and the placenta is not severed until the child has been partially expelled from the uterus, and the contraction around the vessels can therefore take place. But supposing that the uterus has expelled the child, and the contraction, which has been the means of this expulsion as well as of separation of the placenta, fails to continue, then, also, hæmorrhage may take place, and the hæmorrhage is spoken of as *post-partum* hæmorrhage.

In women who have had large families, and under other circumstances, the uterus may fail to contract properly, there is what is called *inertia of the uterus*, and the woman the subject of this inertia is liable to parturient hæmorrhage, which in these particular cases is usually of the *post-partum* variety. The pathology of these cases of *inertia uteri* has not been thoroughly investigated, but there seems reason for believing that the deficiency of contractile power is, in part at least, dependent on an imperfect development of the muscular fibres which constitute the thickness of the uterus, and on which its contractility depends.

To apply these remarks to the case now under consideration: Here was evidently a case in which hæmorrhage took place because the contraction of the uterus was incomplete or insufficient. It is probable that, the animal being old, the developmental power, so far as the regeneration and reproduction of uterine muscular tissue, was to a great degree exhausted, the consequence being defective power in the uterus itself. The fact that the uterus was somewhat thinner than usual afforded grounds for this belief.

There was nothing in the nature of the contents of the uterus themselves to allow of the supposition that the difficulty arose from undue size or irregular shape of the uterine contents, nor was there anything unusual in the structure of the hard parts—the bones of the pelvis—which enter into the formation of the parturient canal; but there was a large accumulation of fat around the brim of the pelvis. Is it possible that this collection of fat formed an obstruction to the expulsion of the contents of the uterus?

The weakness of the uterus and the obstruction may—combined as they were in the case related—have produced the effects described, while neither of these singly and alone may have sufficed to bring them about.

There can be little doubt that artificial assistance of the simplest kind, compression of the abdomen, or withdrawal of the uterine contents (which latter could have been very easily effected), would have brought the labour and the hæmorrhage to a speedy conclusion.

The Turkish Bath for Training Purposes; Remarks, (elicited by the Hon. Admiral Rous's Essay in 'Bailey's Magazine of Sports and Pastimes,') published in 'Bell's Life,' 6th April, 1861. By JOSEPH GAMGEE, Clinical Teacher and Lecturer on the Principles and Practice of Shoeing in the New Veterinary College, Edinburgh.

WE were amongst the earliest in this country to recommend the Roman bath to favourable consideration and fair trial; but we would suggest by way of caution that the said Roman bath, if unduly or prematurely praised, may disappoint expectations, and fall into unmerited disuse. The Admiral has favoured the public with his opinions, but, so far as we have seen, has adduced no facts or reliable evidence to support the doctrines he inculcates. I also, in the absence of positive evidence, must make use of some of a negative kind in support of my opinions.

With a knowledge that the hot-air bath was fairly on its trial at some of our training establishments, I have refrained from writing on the subject, though urged by friends to do so, until trials and time afforded reliable proofs of its effects. Having been professionally engaged last week in the vicinity of the north of England training grounds, I visited one of the moors and consulted trainers on the subject of the Roman bath. Amongst the strings of horses I saw in work, one horse, a grandson of Birdcatcher, was pointed out to me as having been submitted to the bath two or three days before. Using my own judgment in that particular case, I saw that a very different treatment was required to reinstate the horse in his former action and value. From all that I saw and heard in Yorkshire, where the Roman bath was on trial for horses in training, I came to the conclusion that the time has not yet arrived to determine and advise in the matter. The trials have been few and limited in extent of time, and are inconclusive in their results. Thirty-two years ago Sir Hedworth Williamson consulted me on the question as to whether hot-air baths might not be used to some extent in substitution for the ordinary process of sweating race-horses. Then a young practitioner, basing my opinion on physiological grounds, I expressed that more than one object was sought in the ordinary mode of sweating horses. By that process the animal system threw off matter, absorption was excited, and at the same time the whole muscular system, both voluntary and involuntary, was put to that exertion hitherto deemed essential to the full development of speed and power of endurance. This consultation took place at Florence, where Lord Normanby, with the co-operation of the honourable baronet alluded to, and other gentlemen, had established English races. The Roman bath, besides being now on its trial at the principal centres where horses are trained in England, is also on its trial on a more extensive scale, under the surveillance of eminent scientific men. With some of

these we are intimately acquainted, and from them have been in the way of periodically receiving information as to the results of their experiments.

Agreeing as I do with the honourable writer, that there are many defects in the management of race-horses which call for reform, I am nevertheless at a loss to see any connection between these and the supposed influence of the Roman bath. Abusive employment of drastic purgatives and other drugs, internally and externally applied, violently sweating horses too heavily clad and sent over the ground at too fast a pace, all this, with imperfect ventilation of stables and other defects, admit of remedy apart from any consideration of the Roman bath. In a few short sentences we are told that "the Roman bath invigorates the horse's frame, gives increased action to his liver, improves his appetite, cleanses the pores of suppressed perspiration, and fortifies the skin from extreme heat and cold; the joints become more supple, the sinews more elastic, and the heart, lungs, and kidneys, being freed from fat, horses are able to take the stronger exercise without suffering from internal fever." In another paragraph, touching the breaking and training of yearlings, the Admiral says:— "As far as these early trials are concerned, the experiment can now be made at half the risk of destroying the colt, or, in other words, laying the seed of future unsoundness, by using the hot-air bath for absorbing his internal fat and superfluous flesh." Some of the above enunciated doctrines are questionable; with others I totally disagree. Does the Roman bath invigorate the frame, or only temporarily excite? If the latter, will the excitement, if pushed, become exhaustive? Does it increase the action of the liver; and, if so, is that desirable? The improved appetite is accounted for by the laws of nature; it is her effort to draw fresh material to supply the waste which the bath has induced. Is there usually suppressed perspiration in race-horses under the present system of training? Observation and experience do not show this. Can the Roman bath be relied on for rendering the skin proof against the extreme action of heat and cold? The sinews, we are told, become more elastic through the influence of the hot-air bath! This is the first time we ever saw it deliberately written that sinews were elastic at all; and since, for obvious reasons, nature has not made them elastic, it is not desirable, even if it were possible, that the art of man should render them so. However, by other destructive influences, not noticed by the Admiral, a very opposite condition of the tendons (sinews) ensues. About the internal fever which is said to prevail I must plead ignorance as to what the definition points to. Besides curing cutaneous eruptions, the Roman bath, we are told, cures rheumatism and sore shins in horses. No matter what the causes and character of these different diseases, the Roman bath is to cure all. What a wonder that the old Romans, who used their baths in great measure as a luxury, should have overlooked all these miraculous properties!

On the next important physiological question noticed, the use of the bath for absorbing the fat and superfluous flesh of the yearling colt, I submit that a healthy well managed colt, which has been allowed space for voluntary exercise, will not at the age of 18 or 19 months have accumulated deposits of fat that require other means to diminish than the necessary breaking and training process. As to the superfluous flesh spoken of, I never before heard of such a thing, except when uttered by those whose limited knowledge lead them to speak of flesh and fat as one and the same substance. I had always believed that trainers, in conformity with physiological laws, tried to increase flesh, it being the very element of power and speed; any process, including starvation, that causes the flesh to be absorbed, would prove as destructive to race-horses as to any other animal. Whilst I am no adherent to old errors if once detected, I consider it equally important that we should not run from one extreme to another. The old errors were of slow growth, and have had their sharp edges taken off. New projects, plausible in themselves and warmly advocated, may mislead; and if so, the retracing our steps may be very difficult and very costly. If the tender yearling colt could, by being submitted to the hot air bath, be prepared for trial as to speed and power, what will not art be able to accomplish? Such doctrine contemplates a reversal of some of Nature's fundamental laws; physical power in all animals as well as mental power in man increases by exercise; and to my own mind it would seem to be as impossible that a colt should attain to speed and enduring power by the short cut of a Roman bath alone as that a lad should be taught in six lessons to speak French, to write a fair hand, or to play tolerably on the flute.

There are several important points in Admiral Rous's letter on which lack of space prevents me entering at length, viz., the ventilation of stables, the question of how and when to clothe horses, the amount of walking exercise required in training, and whether as a rule this latter should be given once or twice in the day. As to training grooms preferring in such matters to consult their own convenience, that supposition is opposed to the character drawn of trainers by the Admiral himself, and totally at variance with my own experience of all trainers with whom business has brought me in connection. I have always found these men scrupulous, sometimes fastidiously so, in the execution of all details, and am persuaded that if it were known that horses would be the better for being exercised three times a-day, there is not a respectable training groom in England who would not adopt the plan. I have for years past looked at the achievements accomplished by English trainers, who have brought their horses so admirably to the post, as surpassing anything in modern times in the art of the management of horses. Over many of the defects justly complained of trainers themselves have no control: running colts at an early age, some yearlings, and all at two years old, the hurried process of getting them early to a great size, much in the way that

cattle and calves are forced, more with a view to bulk and early sale than to their permanent utility—these are all errors against which the trainer has peculiarly to contend. As to the art of shoeing race-horses, when to begin the process and how to do it, as well as other questions regarding the ill effects of bad management of feet, trainers are unable to help themselves, however willing they may be, and however much they may deplore existing evils.

The question remains—will hot-air baths prove a substitute for all these drawbacks? I say, no. We have not yet sufficient practical data upon which to make the answer in the affirmative, and for my own part I doubt whether matured experience will prove the effect of the bath to be so rapid or so universal as to justify the sweeping statements in the Admiral's essay.

Influenza in Horses. By WILLIAM ROBERTSON, M.R.C.V.S., Kelso.

THE term influenza is one, like many others in veterinary nosology, much abused, and, when most carefully and guardedly employed, is rather ambiguous. It is a very convenient form under which to shroud our doubt or ignorance, while, when employed by one man, it often conveys to another a very different impression from that which it was designed to do. Again, it is not invariable in its forms of development, nor strictly uniform in its symptoms. The fever of one district or season will present considerable variations, both in symptoms and *morbid lesions*, from that occurring in a different locality, or at another period. These variations, it may be, can to a certain extent be accounted for by the consideration of many extrinsic influences brought to bear on the animal constitution. However, there are forms where none of these reasons seem to us sufficient to account for the differences exhibited in its development during life, or cogent enough to allow for the lesions visible on death, in only variations of one and the same malady. Why should we designate by one and the same term an affection so different in the structures on which it seizes, and so contrary in its progress and results—while to nothing so much as this confusion in our nosology may we attribute the diversities of opinion relative to its therapeutic treatment, differences as great as can well be imagined in medical practice.

To give somewhat of a colour to this universal, convertible, and very convenient name, subdivisions have been attempted, and their character indicated by such terms as catarrhal influenza, typhoid pneumonia, typhoid pleura-pneumonia, rheumatic influenza catarrho-rheumatic, &c. Now, although these may possess much thus to associate and classify them, still the differences are great and very distinctive. In one form, the catarrhal, it is generally a very simple matter, not even sufficient to induce constitutional disturbance to prevent the animal partaking of its ordinary diet; in another, the typhoid, accompanied

with gastric complications, sufficient to cause death in forty-eight hours. All, however, beyond the simplest form, are characterised by fever of a low form, and inflammation of a typhoid type; in these, we have not only catarrhal and thoracic symptoms, but also cerebral and abdominal, more or less aggravated.

Frequently it seems to attach itself with pertinacity to membranes or structures of a class, and none more so than the serous and fibro-serous. In such cases, from the very extensive distribution of these textures, and their intimate connection with those organs essential to life, the results are always hazardous. The organs invariably involved are the respiratory, and more or less frequently the nervous centres, digestive system, and organs of locomotion. The one great distinguishing characteristic, however, is the form of fever, which is invariably of an adynamic or typhoid type. It is peculiar that, although it may bear comparison in some manner to pneumonia, or pleurisy, or pleura-pneumonia; and although located in the same structures, its progress is essentially different. In true pleurisy, or pleura-pneumonia, how rapid is the plastic exudation, and how perfect are the organised adhesions, every one is well aware. In the thoracic manifestations of influenza, we frequently find effusion, but the material effused is of an entirely different nature, it does not seem to possess the same capabilities for organisation as the other, and there is little fibrinous matter present, while, as to perfectly formed adhesions, they are not at all frequently met with. The tissue of the lungs also, in pneumonia, in the second stage, passes into the distinct grey hepatisation. Here we have rarely hepatisation—more frequently splenification, and the dull metallic hue characteristic of humid gangrene.

When the febrile attack is confined to those organs and tissues principally external of the serous and fibro-serous class, there will be little pain and no great constitutional disturbance. We may have weeping eyes,—conjunctiva suffused, with tears trickling down the cheeks,—throat sore,—irritable cough,—considerable difficulty in deglutition,—swelling of the limbs, of an anasarcous nature, and consequent stiffness; these the result of infiltration into the basement structure of serous membrane, cellular texture; this texture being abundant not only in the region of the larynx and pharynx, but also in the limbs.

In the more dangerous forms, we have textures of the same class involved, but these in intimate connection with those vital organs, heart, brain, and lungs. In these it is not always gradual in its attack, although, if attention had been very markedly given to the animal, it would have been found that there had been some evidence of ailment previous to the generally declared commencement of the attack. Still we are conscious that an animal may have eaten his usual quantity of food, and done his usual amount of work one day, and the next be found very much indisposed. An unusual and unaccountable amount of debility, a capricious appetite, or total disinclination to feed,—mouth hot and slightly clammy,—extremities and surface of body of unequal temperature, or alternately hot and cold,—

pulse somewhat accelerated and feeble, or hard or wiry,—respirations hurried,—bowels and kidneys acting, fæces firm and slightly coated with mucus, the urine scanty and high-coloured.

Auscultation will detect the respiratory murmur over the whole pulmonary surface, but of an oppressed nature; there may even be at this period effusion in the interlobular spaces of the air cells, and secretion of frothy mucus in the minute bronchii. Should the cerebral organs be involved, the condition will be obvious from the stupor and comatose condition. Where the abdominal viscera are implicated, colicky pains and restlessness will be present from the outset, gradually increasing until the termination. All these conditions may be present the first time the animal is considered unwell.

There is generally great disinclination to move, and where this is effected the amount of weakness is very apparent. This indisposition to move proceeds from the textures entering into the formation of the articulations, and connected with the tendons becoming involved, as well as from the infiltration of fluid into the areolar subjacent textures. Cough may or may not be present, and will vary in its nature in accordance with the amount of the respiratory organs involved, and the malignity of the attack. At first there is not any discharge from the nose, and the schneiderian membrane will vary in colour from a bright pink to a dull, leaden hue. As the disease advances these symptoms become aggravated, or others may be superadded. The schneiderian membrane will become of a yellowish-purple studded with petechiæ, and streaked with straw-coloured rays. There will be a further accelerated and more feeble pulse, sometimes rating as many as 120 per minute,—respirations increased,—dyspnœa excessive. Auscultation may detect whether there is much or any effusion in the thorax, as it is not always present even in advanced cases. Should the animal survive long enough, anasarcous swellings will most probably show themselves in those situations most favourable for their development. When fluid is effused in the chest or heart sack, the character of both respirations and pulsations become altered. We have the flapping of the nostrils, the lifting of the loins during inspiration, which is shorter than expiration; the irregular pulse, a pulsation in which some of the beats are of a different tone it may be, but more frequently of such a nature that it beats more in one given space of time than in the same space immediately following.

At this stage there will be an intermittent discharge from the nasal passages of a yellowish sero-albuminous nature, accompanied with extreme fetor of breath. The bowels are apt to become constipated and the urine to show a diminution in amount, and an alteration in its constituents.

There is during the progress of this an extremely haggard and restless expression of countenance, with features much pinched, and a continual desire, as long as not perfectly comatose, to have

the head turned to where the greatest amount of cool air may be inspired.

The organic lesions visible on examination after death vary according to the class of organs implicated. The greatest amount of alteration we have always found in the respiratory system. The fauces, with larynx and pharynx, much tumefied and of a livid gangrenous appearance, the inner tracheal surface of a dark-red colour, the bronchii the same and filled with frothy mucus. Mostly the fluid in the chest will be of a blood colour with little or no lymph, and of a fœtid smell, a few adhesions of a feeble nature may be found between the costal and pulmonary pleura; both membranes of a dark metallic colour; lungs not often perfectly hepatized, more frequently showing examples of splenification, gangrenous, and emphysematous. The thoracic surface of the diaphragm presents similar appearances as to adhesions and colour with the costal pleura. The heart shows blanching and softening of the muscular fibre, with the presence of hydrops-pericardii.

The blood in the large vessels, passing to and from the heart, is altered in appearance, being darker and more viscid than natural.

The abdominal viscera, in those cases where abdominal pain has been evinced, as might be expected, exhibit abnormal appearances.

In the duodenum and other portions of the small intestine we have ecchymosis, and an evident irritated condition of the mucous membrane; we have never as yet found true ulceration present. The peritoneum is also occasionally marked with petechiæ or vibices. In the cerebral and spinal canal vascular arborescence is visible, and an extra amount of straw-coloured fluid present.

What specific morbific influence may be the particular predisposing cause of this malignant fever we are not prepared to say. Whether a diminished quantity of ozone, or a disturbed state of the atmospheric electrical equilibrium, certain it is that it seems subject to those laws which regulate the spread of epizootics or epidemics generally, while the most potent of those influences which operate as exciting agents are ascertainable by any ordinary observer. For many years we have observed that where influenza has been raging to any extent amongst the horses of a district, affections of an analogous nature have prevailed in the human subject. We are conversant with many instances where, in the typhoid form, it has been developed and kept increasing with the prevalence of malignant scarlatina and diphtheritic inflammation of the throat. It is curious to mark how this typhoid type of inflammation is apt to associate itself with affections which may occur at the same period in the same district, these not in themselves essentially typhoid. Thus, should this form of influenza appear where strangles are prevailing, there will be a large proportion of the latter take the irregular form, and a considerable fatality attend an otherwise non-malignant affection.

As a general rule, influenza will be most numerous in its cases,

most complicated in its forms, and most fatal in its ravages, amongst those animals subjected to imperfect stable accommodation, most meagrely supplied with proper nutriment, or most oppressed with labour.

No amount of careful dieting can compensate for an overtaxing of the physical energies, and consequent lowering of the nervous force. While from the extensive surface—a surface of an extremely delicate organization—in the respiratory system of the horse, the want of a sufficient supply of pure atmospheric air is quickly and severely felt. And in any stable where horses are kept, unless more attention is bestowed on cleanliness than has generally been thought necessary, gaseous emanations of a noxious nature, resulting from the decomposition and new arrangement of the component elements of animal and vegetable products, will speedily be abundantly present.

We have done more to banish this typhoid form of fever from stables, by attention to ventilation and drainage, than by all other measures together. We are acquainted with one stable where its visits were at least biennial, and most malignant, from which, by a little trouble, and less expense, it has been warded off for three years. Here, at its last outbreak, half of the horses died in five weeks, and none were over eight days ill.

That it may, in its most malignant form, be propagated by infection or contagion, we are fully convinced; indeed the fetor of breath in these is only the result of disintegration of living structure, and minute particles of animal virus are thereby conveyed within other animal systems. For although every case or many cases cannot be traced to actual contact with diseased animals, this does not at all invalidate the truth of the fact, that its operations are similar to the operations of other diseases well established as contagious epizootics.

(To be continued.)

On the Management of Pit Horses. By CHARLES HUNTING, Veterinary Surgeon to the South Hetton, Murton, East Hetton, and Trimdon Grange Coal Companies, Durham.

[There is no more difficult position for a veterinary surgeon than to advise regarding the most economical method of managing a large number of horses. It is of very great importance that our agricultural horses be better fed and treated than they are. There is no easier method of losing capital than in improperly administering to the wants of a stud of horses; and we reprint the reports which follow, as deserving of the very highest encomium, and can be singled out amongst much desultory and injurious writing on the subject.—ED., *Edin. Vet. Review.*]

South Hetton Colliery, 30*th September*, 1854.

(*To* Percival Forster, Esq., *Durham.*)

Dear Sir,—In compliance with your request I beg to hand you a copy of the annual report of the consumption of provender in the horse establishments at South Hetton, Murton, East Hetton, and Trimdon Grange Collieries, for the year 1853; also the average actual cost of each horse's provender, and the quantity consumed at each of the above collieries for three years, ending the 31st of December, 1853.

South Hetton and Murton Collieries.

To get the average number of horses for each pay[1] during the year, we take 3 large ponies—that is, those from 13 to 15 hands high—as equal to 2 horses; and 2 small ponies—those from 11 to 12½ hands high—as equal to 1 horse; this average gives equal to 131 horses for each pay during the year.

The average consumption of hay was 293 cwts. per pay, or 17¼ stones for each horse per pay.

The average consumption of oats was 252 bolls per pay, or nearly 15½ pecks for each horse per pay.

The cost of bran, beans, tares, linseed, turnips, barley, and grass consumed, was 149s. per pay, or 1s. 1d. for each horse per pay.

17¼ stones of hay, at 6d. per stone . . .	L.0	8	7½*
15½ pecks of oats, at 5s. per boll . . .	0	9	8¼
Bran, beans, barley, tares, &c. . . .	0	1	1¾
	L.0	19	5½

* The consumption of hay for 1853 averages 1¾ stones for each horse per pay more than in 1851–52; in 1851 the average was 15 stones, and in 1852 16 stones for each horse per pay. The increased quantity of hay consumed in 1853 arose from three causes:—*Firstly*, in May, June, and July, were purchased 36 Iceland ponies, which averaged 12½ hands high; these ponies were taken in the average as 2 ponies equal to 1 horse, because used for putting purposes; the ponies, however, consumed as much hay as those taken in the averages as 3 equal to 2 horses. *Secondly*, Only about one-third of the green food used in the summers of 1851–52 was used during the summer of 1853. *Thirdly*, During the "Men's strike" the horses were kept principally upon hay and bran, which increased the consumption of hay by nearly 10 tons, and decreased the consumption of oats by about 250 bolls.

East Hetton Colliery.

Making the same division with the ponies as at South Hetton and Murton Collieries, an average is obtained equal to 54 horses for each pay during the year.

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[1] All colliery accounts are made up in what are called *Pays*, meaning fourteen days, or one fortnight.

The average consumption of hay was 98 cwts. 2 qrs. per pay, or nearly 14½ stones for each horse per pay.

The average consumption of oats was 178 bolls per pay, or 3¼ bolls for each horse per pay.

The cost of bran, linseed, barley, grass, &c., &c., consumed was 81s. per pay, or 1s. 6d. for each horse per pay.

(Prices those of 1849 and 1851.)

14½ stones of hay, at 6d. per stone . . .	0	7	3*
3¼ bolls of oats, at 5s. per boll	0	16	3
Bran, linseed, grass, &c., &c. . . .	0	1	6
	L.1	5	0

* The consumption of hay and oats at East Hetton Colliery for 1853 is not a fair criterion. Three circumstances arose which disarranged the usual mode of feeding:—*Firstly*, The hay for the greater part of the year being very indifferent in quality, much less than the usual quantity was eaten, and more than the usual quantity of oats had to be given. *Secondly*, A much larger quantity of green food was used in 1853 than during the years of 1851–52. *Thirdly*, The water in the south pit, covering the rails on the waggon-ways, greatly increased the labour of the animals, so much so, that each of the horses in that pit required for several months in the year a bushel of oats per week (given during the working hours), more than was given to the horses in the north pit, to keep them in the same working condition. In 1851 the hay averaged 23 stones for each horse per pay, oats averaged 2½ bolls for each horse per pay. In 1852 hay averaged 20½ stones for each horse per pay, oats averaged 2⅞ bolls for each horse per pay.

Trimdon Grange Colliery.

Old plan of feeding, as at East Hetton Colliery.

Making the same division with the large and small ponies as at the other collieries, an average is obtained equal to 20 horses for each pay during the year.

The average consumption of hay was 57 cwts. 2 qrs. per pay, or nearly 23 cwts. for each horse per pay.

The average consumption of oats was 61½ bolls per pay, or 3 bolls for each horse per pay.

The average cost for bran, tares, linseed, &c., was 17s. per pay, or 10d. for each horse per pay.

23 stones of hay, at 6d. per stone . . .	L.0	11	6
3 bolls of oats, at 5s. per boll	0	15	0
Bran, tares, and linseed	0	0	10
	L.1	7	4

The above are only assumed prices of provender—being those of

1851—taken to show the difference in the *quantity* of food consumed under the system of feeding, as carried out at South Hetton and Murton, and the old plan as carried out at East Hetton and Trimdon Grange.

The following is the actual cost of the provender consumed in the above table, by each horse, at each place, as per consumption-books, for the year 1853.

South Hetton and Murton Collieries.

Average cost per pay, L.136, 6s., or nearly 21s. for each horse per pay.

East Hetton Colliery.

Average cost per pay, L.73, or 27s. for each horse per pay.

Trimdon Grange Colliery.

Average cost per pay, L.28, 1s. 10d., or 28s. 1d. for each horse per pay.

The following tables show the comparative cost of each horse's provender, at each colliery, for three years, ending the 31st December, 1853:—

South Hetton and Murton.	East Hetton.	Trimdon Grange.
1851.	1851.	1851.
Cost per pay, 19s. 2d.; or L.24, 18s. 4d. per year.	Cost per pay, 25s. 5½d.; or L.33, 1s. 11d. per year.	Cost per pay, 24s. 8d.; or L.32, 12s. 4d. per year.
1852.	1852.	1852.
Cost per pay, 19s. 3¼d.; or L.25, 1s. 0½d. per year.	Cost per pay, 28s. 2d.; or L.36, 12s. 4d. per year.	Cost per pay, 27s. 6d.; or L.35, 15s. per year.
1853.	1853.	1853.
Cost per pay, 19s. 5½d.; or L.25, 5s. 11d. per year.	Cost per pay, 27s.; or L.35, 2s. per year.	Cost per pay, 28s. 1d.; or L.36, 10s. 2d. per year.

The difference in favour of South Hetton and Murton system of feeding over that of the old plan, as carried out at East Hetton and Trimdon Grange, is as follows:—

Saving in favour of South Hetton for 1851, with 145 horses, L.38, 1s. 3d. per pay, or for the year,	L.989	12	6
In favour of South Hetton for 1852, with 130 horses, L.43, 17s. 6d. per pay, or for the year, .	1140	15	0
In favour of South Hetton for 1853, with 131 horses, L.42, 11s. 6d. per pay, or for the year, .	1106	19	0
Total saving in favour of South Hetton system of feeding for three years, ...	L.3237	6	6

In addition to the above, I have no doubt but that over L.300 per year can be saved in the South Hetton and Murton establishments alone, by mixing good straw cut up with good hay. This plan has been tried at South Hetton and Murton Collieries for several weeks, and is answering very well.

The above is a copy of the annual report sent at the commencement of this year.

I may now add that, for upwards of nine months, we have continued to use from one-twelfth to one-sixth part of good straw cut up with the hay, and the horses and ponies, both at bank and in the pits, were never in better health, or in better working condition, than at the present time, and are working regularly every day.

The quantity of straw we are thus mixing will effect an average saving of about two tons of hay per pay—rather over than under—which, at L.6 per ton, is L.312 for the year.

I think the consumption of hay for this year at South Hetton and Murton Collieries will be under fourteen stones for each horse per pay, taking both bank and pit horses in the average. The only correct way of getting at the exact average consumption of provender for each horse, is by ascertaining the quantity consumed every fortnight for the past year upon the *whole establishments*, and the number of horses and ponies at bank and in the pits for each pay during the year. We have some stables where the number of animals kept are equal, yet consuming one-sixth part more provender than in others, the principal cause of which is, that the labour is much heavier in some parts of a pit than it is in others, and the greater the expenditure of muscular power, the greater the waste of those muscles, and a larger supply of food is required to replenish them. The description of food used is of the greatest importance in an economical point of view. In all cases where an animal's work is very laborious, a great proportion of his food ought to consist of leguminous seeds, such as beans, peas, and tares, mixed with bran. Again, the consumption of hay varies as much as two or three tons per pay with the same number of animals. This variation occurs both at South Hetton and East Hetton, therefore, under both systems of feeding, and shows clearly that the consumption of hay for one or two pays cannot be relied upon as a sure basis for a correct average for the year. I should here add, that all the horses and ponies at each colliery have hay *ad libitum* both at work and in the stables. The hay boxes at the sidings are never allowed to stand empty, and all the ponies get hay at the stations. This plan has greatly increased the consumption of hay, but the expense is more than counterbalanced by the good health and condition of the animals.

At all the collieries every kind of food is carefully weighed or measured, and duly entered in the consumption-books, for each and every pay during the year; also the number of horses and ponies of each size for each and every pay during the year, both in the pits and at bank. From these books the averages are taken yearly.

In consequence of the objections which are raised by many persons to what is called "the new plan of feeding" (twenty-five years old to my knowledge), I beg to offer you the following remarks. Some of the objections, however, are so frivolous, that I should consider it a waste of time to mention them, were it not that they are advanced and believed in by otherwise intelligent men—men who have charge of the horse establishments at some of the largest collieries in this county.

First. Some object very strongly to bruising and cutting the provender, and the reason they advance in support of their objection is, that it is an artificial plan.

Second. Others object to it because they say the cut and bruised food passes through the animals so fast, that it cannot do them so much good as when given whole.

Third. Others gravely assert that bruising the oats squeezes out the goodness, exposes the interior of the oat, and the air dries up the nutriment.

Fourth. Others object to it because they say the animal eats his food so quickly that it does not become thoroughly masticated and mixed with the saliva, and, therefore, cannot do the horse so much good as if otherwise given.

The three first objections are so glaringly ridiculous that they are not worth further notice. The last objection, however, appears at first sight more feasible, and requires to be investigated, as the saliva plays a very important part in the process of digestion. If their theory were correct, it would be a very important objection indeed, but that the reverse is the case, I think I can clearly prove.

Oats when given whole, particularly to aged animals, pass in large quantities through the intestinal canal with the fæces unmasticated, and consequently undigested, and, when thus passed, not only give no nutriment to the body, but, we believe, do harm. The large intestines of the horse and his species, unlike most other animals, are extremely large, and the glands are constantly pouring forth their secretions to digest the unmasticated corn, but without effect: this waste of the secretion must be at the expense of the animal's condition, without giving any advantage. Both these evils are entirely removed by bruising and cutting the animal's provender. The most careless observer of horses knows very well that it is very rare indeed to meet with an undigested oat in the fæces of an animal living on bruised food and cut hay, but exactly the reverse of this is seen when unbruised oats and uncut hay are given, especially to aged animals. If, therefore, oats passing undigested through the digestive tube do no good, but harm, it is natural to suppose that an animal can do an equal amount of work with a less quantity of provender, where he gets all the nutritive matter from every oat he eats, than he can where he loses all the nutriment from a large portion of what he eats.

According to the experiments of the best chemical physiologists of the present day, we must conclude that the mixture of the food with the saliva is of the utmost importance in effecting good and easy

digestion. If it is so in the human subject, much more must it be so with the herbivorous animals, whose food contains so much starchy matter—that constituent of vegetables upon which the saliva principally acts, and which is converted with the elements suitable for carrying on respiration, and for producing animal heat. It would be out of place for me here to explain the whole process of digestion, and the various chemical changes which take place in the different constituents of food as they pass from the mouth backwards; I shall therefore only mention one experiment of Mialke and Keaumur, to show the importance of the food being properly mixed with saliva, and then shall endeavour to prove that the *whole* of the provender is better masticated, and more thoroughly mixed with the salivary fluids, when the hay is cut, and the oats bruised and mixed together, than when given the old way.

The above-named gentlemen proved, by several experiments, that if food was mixed with *water only* and placed in the stomach, and the œsophagus tied, that although the stomach secreted abundance of gastric fluid, it did not undergo digestion, but if the same food was mixed with saliva, and the rest of the experiment similarly performed, the food was readily digested. These, and many other experiments of a similar kind, made by men of the highest standing in chemistry and physiology, are, I think, conclusive evidence of the importance of saliva in the process of digestion.

The question, then, that requires to be solved—to prove the groundlessness of the fourth objection—is, Do horses eat a given quantity of cut hay and bruised oats, *mixed together*, in a less period than they would if the hay were given uncut, and the oats given whole separately?

The following experiment will, I think, clearly prove that they do not:—

Four horses in the south pit at South Hetton Colliery had placed in their respective mangers 9½ lbs. of oats, and 4 lbs. of long hay, in the cribs by the side of the mangers. Four other horses in the same stable had the same weight of bruised oats placed in their mangers mixed with 4 lbs. of cut hay. This was done before the horses came into the stable from work, so that each horse commenced eating his food at the same time. The four horses with the oats and long hay separate, ate up their food in the following period:—

1st	horse	finished	his	oats	and long hay in	52 minutes.
2nd	do.	do.	do.	do.	46	do.
3rd	do.	do.	do.	do.	61	do.
4th	do.	do.	do.	do.	46	do.
				Total,	205	do.

The four horses with bruised oats and cut hay mixed:—

1st horse finished his food in			.	61	minutes.
2nd	do.	do.	do. . .	54	do.
3rd	do.	do.	do. . .	71	do.
4th	do.	do.	do. . .	59	do.
			Total,	245	do.

In the above experiments, which may be taken as a general average, care being taken to get the animals all under eight years old, all within an inch of the same height, and all with a common average appetite, we see that the difference in the time occupied by four horses eating the same weight of provender, is 40 minutes in favour of mixed food.

A horse 15 hands 3 inches high secretes from the parotid glands alone, during active mastication, about one gallon of saliva per hour; and from the experiments of physiologists, the other three pairs of salivary glands, and the mucous glands of the mouth, are supposed to secrete nearly four times the quantity, making in all about four gallons of saliva to be mixed with the food of each horse during one hour's active mastication. In 1844, an aged bay horse, 15 hands 3 inches high, had the tubes leading from the parotid glands divided on either side, and so fixed as to throw their contents into vessels held for that purpose, the animal was then fed upon oats. After fasting six hours, the amount of secretion from the two tubes was half a gallon in 30 minutes, the whole of which time the animal was masticating.

This physiological fact proves that, by mixing cut hay with the oats, each animal had, in the before-mentioned experiment, $5\frac{1}{4}$ pints of saliva mixed with the same weight of food more than those which had their oats and hay separated.

We consider this to be one of the most important advantages obtained by cutting, bruising, and mixing the provender—for not only is the food threefold more easily digested when so masticated and mixed with saliva, but we think the animal receives a far greater amount of nutriment from the same weight of food. The animal's stomach would labour in vain to digest the food as perfectly, if it were not so well masticated and mixed with the fluids of the mouth, and all provender not thoroughly digested imparts but little of its nutriment to the body.

Were it not for being tedious, I should like to explain more fully the physiology of digestion in the horse, which would prove some of the many advantages which must be obtained in the several stages of digestion, by giving an animal mixed food.

I cannot, however, omit to mention the following fact, to show what erroneous notions some people have of the process of digestion. Two gentlemen intimately connected with two of the largest horse establishments in this county, were discussing the other day the advantages and disadvantages of bruising and cutting food for pit horses, and the only advantage they could see in that plan of feeding was,

that the animal would fill his stomach twice as quickly, and lie down to rest himself so much the sooner—the very thing of all others which would prove the greatest disadvantage to the poor animal that can well be imagined; in fact, the stomach of the horse would have to labour incessantly for an hour to do that which his masticatory apparatus would accomplish in five minutes. It is a very curious anatomical fact, that the equine race have a much smaller stomach (compared with the back of the body) than any other known animal, and numerous experiments have proved that the horse, in his natural state, eats eighteen hours out of every twenty-four.

Unfortunately for the poor animals in pits, the principles of digestion are too little understood, and still less cared for.

Nothing can be more disadvantageous to pit horses, and less economical, than the usual plan of feeding in underground stables. The horses are generally out of the stable from 12 to 14 hours, during which time (in many pits) they only get a few mouthfuls of hay, seldom any oats; they come into the stable half famished. A little box about 12 or 15 inches long, and half that width, filled with corn, being placed before the animal, the hungry beast eats so voraciously, that a great part of his food is not half masticated, and many of the oats not at all.

Food thus given exacts from the stomach a much larger amount of labour than would be required if judiciously given. I have seen many horses in the pit stables at East Hetton Colliery before the present plan was adopted, eat the whole of their night's corn under fifteen minutes, and, no doubt, with a loss of nearly one-third of its nutriment.

The importance of giving to horses a variety of kinds of provender, mixed together, cannot be too strongly recommended. I have no doubt but that pit horses can be kept in as good a working condition, doing the same amount of labour, upon $\frac{3}{4}$ boll of oats, 2 stones of beans, 1 stone of bran, 7 stones of hay, and 1 stone of straw per week, if bruised, cut, and mixed together, as they could be upon $1\frac{1}{2}$ bolls of oats, and 10 stones of hay, if given unbruised, uncut, and unmixed, which would stand thus:—

BRUISED AND MIXED FOOD.

$\frac{3}{4}$ boll of oats, at 8s. per boll . .	L.0	6	0
2 stones of beans, at 1s. 8d. per stone .	0	3	4
1 stone of bran, at 9d. per stone .	0	0	9
7 stones of hay, at 8d. per stone .	0	4	8
1 stone of straw, at 1s. $0\frac{3}{4}$d. per stone	0	1	$0\frac{3}{4}$
	L.0	14	$10\frac{3}{4}$

UNBRUISED AND UNMIXED FOOD.

$1\frac{1}{2}$ bolls of oats at 8s. per boll . .	L.0	12	0
10 stones of hay, at 8d. per stone .	0	6	8
	L.0	18	8

Supposing the above tables to be correct, it would make a difference in favour of the mixed-food system, at South Hetton and Murton, with the present number of horses, of upwards of L.1500 per year. I shall briefly recapitulate some of the principal advantages derived from the plan of feeding, as adopted at South Hetton and Murton Collieries.

1*st*, The animal's provender is better masticated, and mixed with the fluids of the mouth—consequently easier and better digested, and more nutriment obtained than when the oats are given whole, the hay uncut and unmixed; therefore a less quantity of food is required.

2*nd*, The state of the digestive organs of animals so fed is better than when the provender is otherwise given. In an average number of 220 animals, during nearly four years, diseases of the digestive organs were very seldom seen, having only averaged 000·45 per cent., which is nearly 20 times less than what occurred at East Hetton, under the old plan of feeding, and which is more than 20 times less than that which takes place in agricultural horses.

3*rd*, No hay is spoiled in going down the pits, in the workings, or under the animals' feet at night.

4*th*, Horses do not eat less hay by its being cut, where the advantage gained is, that the animal is compelled to masticate his other provender much better by being mixed with the cut hay than he otherwise would do; the only saving of hay effected by cutting it into chaff, is that which would be wasted in going down the shafts, in the workings, and in the stables under the horses' feet, which, we believe, would average at least 2 lbs. for each horse per day. This waste, in an establishment like South Hetton, would amount to 472 lbs. per day, or taking hay at L.6 per ton, to the very large sum of L.462 per year.

5*th*, It is of the utmost importance for the general good health of horses in a large establishment to use a variety of kinds of provender. We use at South Hetton, oats, beans, peas, bran, barley, tares, linseed, old and new land hay, green clover and tares, turnip, and straw.

6*th*, In an economical point of view, it is very important to regulate the quantity of each kind of provender, according to the amount of labour the animals have to undergo. Thus, if the pits are working 11 days per pay, with occasional overtime, leguminous seeds and bran should be largely given, and less oats and straw; and *vice versa*, when the pits are working only 7 or 8 days per pay, the beans, barley, tares, &c., should be decreased, and the oats, straw, &c., increased; and in all cases where horses and ponies are worked extremely hard, nothing would be more economical than to empoly a person to give every animal a feed of corn, about the time that the fore-shift men are leaving their work.

Second Report.

An account of the comparative and actual cost of the provender consumed in the horse establishments at South Hetton and Murton, East Hetton, and Trimdon Grange Collieries, for the year 1856.

Also, the average comparative cost of each horse's provender at each of the above collieries for six years ending the 31st December, 1856.

And a statement showing some of the advantages gained, and the saving effected, by using various kinds of provender, by cutting the hay, and bruising all kinds of grain, and giving them mixed together, as compared with the old plan of feeding, as pursued during the year 1849. I have chosen the latter year, for the basis of the comparison, in preference to the one I have hitherto taken (viz., the difference between the cost of feeding each horse at East Hetton Colliery, under the old plan, for three years, as compared with the cost of each horse's provender at South Hetton and Murton Collieries during the same period, where the present plan of feeding was adopted; the difference was supposed to be the saving effected), because it was the last year before cutting the hay and bruising the oats was introduced at South Hetton and Murton Collieries, and the price of provender being the same as in 1851.

I also subjoin a few remarks on various kinds of provender, the relative value of each as food for pit animals, and the cost per pound weight of the nutritive properties of each during the year 1856.

South Hetton and Murton Collieries, 1856.

The average number of horses and ponies at the above collieries, during the year 1856, was as follows:—73 horses, 32 large ponies, and 117 small ponies. To get the average number of horses we take 3 large ponies—those from 13 to 15 hands high—as equal to 2 horses; and 2 small ponies—those from $10\frac{1}{2}$ to $12\frac{1}{2}$ hands high—as equal to 1 horse; this gives an average equal to 152 horses for each pay during the year.

The average quantity of hay consumed was 15 tons 10 cwt. 2 qrs. per pay, or nearly $16\frac{1}{2}$ stones for each horse per pay.

The average quantity of oats consumed was 269 bolls per fortnight, or $1\frac{3}{4}$ bolls for each horse per pay.

The cost of beans, bran, tares, linseed, clover, turnips, and grass, was L.466, 16s. 6d., L.17, 19s. 1d. per pay, or 2s. $4\frac{1}{4}$d. for each horse per pay.

Actual quantities used in 1856.

(Prices those of 1849 and 1851.)

*$16\frac{1}{2}$ stones of hay, at 6d. per stone . .	L.0	8	3
$1\frac{3}{4}$ bolls of oats, at 5s. per boll	0	8	9
Beans, barley, bran, clover, &c., &c. . .	0	2	$4\frac{1}{2}$
	L.0	19	$4\frac{1}{2}$

Actual cost of provender consumed per each horse per pay, L.1, 3s. $11\frac{1}{4}$d.

* The consumption of hay for 1856 averaged one stone per week more for each horse than it did during the years 1854 and 1855. The reason of which is, we have not been able to get any straw to cut up with the hay, in consequence of the shortness of quantity and the bad quality. The increased consumption of hay at South Hetton and Murton Collieries for the years 1856–57, for want of straw to cut up, will not be less than 150 tons, which at 100s., will cost L.750 in the two years.

East Hetton Colliery, 1856.

The average number of horses and ponies for each pay, during the year 1856, was as follows:—47 horses, 17 large ponies, and 45 small ponies. Making the same division with the ponies as at South Hetton and Murton Collieries, it gives an average equal to 80 horses for each pay during the year.

The average quantity of hay consumed was 7 tons, 5 cwt. 2 qrs. per pay, or $14\frac{1}{2}$ stones for each horse per pay.

The average quantity of oats consumed was 152 bolls per pay, or $1\frac{7}{8}$ bolls for each horse per pay.

The cost of beans, bran, grass, &c., &c., was L.302, 12s. 2d., L.11, 13s. 6d. per pay, or 2s. 11d. for each horse per pay.

ACTUAL QUANTITIES USED IN 1856.

(Prices, those of 1851 and 1849).

$14\frac{1}{2}$ stones of hay, at 6d. per stone . . .	L.0	7	3
$1\frac{7}{8}$ bolls oats, at 5s. per boll	0	9	$4\frac{1}{2}$
Beans, bran, grass, &c., &c.	0	2	11
	L.0	19	$6\frac{1}{2}$

Actual cost of provender consumed by each horse per pay, L.1, 8s. $9\frac{1}{2}$d.

At Kelloe we were using straw with the hay for a great part of the year, which has made the consumption of it so much less than at South Hetton and Murton Collieries, where we had none to use.

It will be observed that the quantities of provender consumed at Kelloe, since the new plan of feeding was introduced, are almost identical with those consumed at South Hetton and Murton Collieries during the years 1851, 1852, and 1853. The slight difference may be accounted for from the fact that there is a much larger proportion of waggon horses employed at the new winning, and secondly, from the provender being generally of an inferior quality to that used at South Hetton and Murton.

Trimdon Grange Colliery, 1856.—Old Plan of Feeding.

The average number of horses and ponies for each pay, during the year 1856, was as follows:—12 horses, 4 large ponies, and 14 small ponies. Making the same division with the ponies as at the other collieries, it gives an average equal to 21 horses for each pay during the year.

The average quantity of hay consumed was 2 tons per pay, or 17¼ stones for each horse per pay.

The average quantity of oats consumed was 67 bolls per fortnight, or 3⅛ bolls per pay for each horse.

The cost of tares, bran, and linseed, was L.1, 14s. 4d. per pay, or equal to 1s. 9d. for each horse per pay.

ACTUAL QUANTITIES USED IN 1856.

(Prices of 1849 and 1851.)

17¼ stones of hay, at 6d. per stone . . .	L.0	8	7½
3⅛ bolls of oats, at 5s. per boll . . .	0	15	7½
Bran, tares, and linseed	0	1	9
	L.1	6	0

Actual cost of provender consumed by each horse per pay, L.1, 17s. 10¾d.

SOUTH HETTON AND MURTON COLLIERIES, 1849.

The number of horses and ponies were as follows:—94 horses, 14 large ponies, and 61 small ponies. Making the same division with the ponies, as in subsequent years, it gives an average equal to 134 horses for each pay during the year.

The cost of the provender consumed during the year 1849, at South Hetton and Murton Collieries, was L.5002, 19s., or equal to L.1, 8s. 8½d. for each horse per pay.

QUANTITIES USED IN 1849.

22½ stones of hay, at 6d. per stone . . .	L.0	11	3
3 bolls of oats, at 5s. per boll . . .	0	15	0
Grass, beans, &c., &c.	0	2	5½
	L.1	8	8½

or L.37, 6s. 5d. for each horse per year.

EAST HETTON COLLIERY, 1849.

There were 33 horses and 9 ponies. Making the same division with the ponies, as in subsequent years, it is equal to 37 horses for each pay during the year.

The quantity of hay consumed during the year was 149 tons, 15 cwt. 2 qrs., or rather more than 24¾ stones for each horse per pay.

The quantity of oats consumed in the year was 2361⅛ bolls, or 2½ bolls for each horse per pay.

QUANTITIES USED IN 1849.

*24¾ stones of hay, at 6d per stone . . .	L.0	12	4½
2½ bolls of oats, at 5d. per boll . . .	0	12	6
Grass, &c., &c., &c.	0	1	9½
	L.1	6	8

* The weight of hay consumed seems enormous when compared with the quantities used now. The animals, however, do not eat less now than they did then. They eat more, very much more, because six times the quantity of hay is used in the workings and at the sidings during the day *now* than was used in 1849. The saving was effected in three ways: first, that which was wasted beneath the animals' feet; secondly, by using straw cut up with the hay; thirdly, by giving the cut hay, bruised grain, and straw mixed together.

At East Hetton Colliery, in 1851–52, the consumption of hay was respectively, for each horse, 23 stones; and 20½ stones per pay, when given uncut, and unmixed with the oats.

The following tables show the comparative cost of each horse's provender at South Hetton and Murton Collieries, and at East Hetton Colliery, for six years, ending the 31st December 1856, also for the year 1849:—

South Hetton and Murton Collieries.	East Hetton Colliery.
1851.	1851.
Cost per pay, 19s. 2d.; or L.24, 18s. 4d. per year.	Cost per pay, 25s. 5½d.; or L.33, 1s. 11d. per year.
1852.	1852.
Cost per pay, 19s. 3¼d.; or L.25, 1s. 0½d. per year.	Cost per pay, 26s. 3½d.; or L.34, 3s. 7d. per year.
1853.	1853.
Cost per pay, 19s. 5½d.; or L.25, 5s. 11d. per year.	Cost per pay, 25s.; or L.32, 10s. per year.
1854.	1854.
Cost per pay, 18s. 9d.; or L.24, 7s. 6d. per year.	Cost per pay, 22s. 7d.; or L.29, 7s. 2d. per year.

On the 1st July 1854, the South Hetton plan of feeding was commenced at East Hetton.

1855.	1855.
Cost per pay, 17s. 8d.; or L.22, 19s. 2d. per year.	Cost per pay, 20s. 9d.; or L.26, 19s. 6d. per year.
1856.	1856.
Cost per pay, 19s. 4½d.; or L.25, 3s. 2d. per year.	Cost per pay, 19s. 6½d.; or L.25, 8s. 1d.
1849.	1849.
Cost per pay, 28s. 8½d.; or L.37, 6s. 5d. per year.	Cost per pay, 26s. 8d.; or L.34, 13s. 4d. per year.

From a comparison of the above tables, it will be seen that the difference in the cost of the quantity of the provender used under the present system of feeding, as compared with the quantity used in 1849 at South Hetton and Murton Collieries, was equal in 1851 to 9s. 6d. less on each horse per fortnight, with hay at 80s. per ton, and oats at 5s. per boll, or with 145 horses to L.64, 3s. 6¼d. per pay; and for the year, L.1788, 12s. 1d.

For the year 1852, it was equal to 9s. 5¼d. on each horse per pay, or with 130 horses to L.61, 6s. 10d. per pay, or for the year, .	L.1,584	17	6
For the year 1853, it was equal to 9s. 3d. on each horse per pay, or with 131 horses to L.60, 11s. 9d. per pay, and for the year, .	1,575	5	6
For the year 1854, it was equal to 9s. 11½d. on each horse per pay, or with 156 horses to L.72, 13s. 11d. per pay, or for the year, .	1,890	1	10
For the year 1855, it was equal to 11s. 0½d. on each horse per pay, or with 140 horses to L.77, 5s. 10d. per pay, and for the year, .	2,009	11	8
For the year 1856, it was equal to 9s. 4¼d. on each horse per pay, or with 152 horses to L.71, 1s. 10d. per pay, or for the year, .	1,848	7	8
Total saving on the quantity of provender used at South Hetton and Murton Collieries during six years, ending 31st December, 1856, .	10,696	15	2

East Hetton Colliery.

The cost of each horse's provender, for the year 1849, was equal to L.1, 6s. 8d. per day. From that period up to the 1st July, 1854, the same system of feeding was continued. At the latter date, cutting the hay, bruising the oats and beans, and giving them mixed together, was commenced, and is now carried out, with the same satisfactory results as at South Hetton and Murton Collieries, viz., keeping the animals in a better state of health, in good working condition, and at a much less cost.

In 1851 the consumption of provender (taking 1849 as the standard of comparison) was equal to 1s. 2½d. less on each horse per pay, with 45 horses, to L.2, 14s. 4d. per pay, and for the year to	L.70	13	9
For 1852 it was equal to 4½d. less on each horse per pay, with 48 horses, to 18s. per pay, and for the year to	23	8	0
For 1853 it was equal to 1s. 8d. less on each horse per pay, with 54 horses, to L.4, 10s. per pay, and for the year	117	0	0
For 1854 it was equal to 4s. 1d. less on each horse per pay, with 61 horses, to L.12, 9s. 1d. per pay, and for the year	323	16	1

South Hetton and Murton Plan of Feeding, adopted on the 1st of July in the above Year.

For 1855 it was equal to 5s. 11d. less on each horse per pay, with 70 horses, to L.20, 14s. 2d. per pay, and for the year	L.538	8	4

For 1856 it was equal to 7s. 1½d. on each horse per pay with 80 horses, to L.28, 10s. per pay, and for the year	L.741	0	0
Total saving of provender in six years, at East Hetton Colliery, ending 31st December, 1856 .	1814	6	2
South Hetton and Murton Collieries in six years .	10,696	15	2
Total for both collieries	L.12,521	1	4

The price of the hay used at South Hetton and Murton Collieries in 1849 was L.4 per ton (the same price as the hay used in 1851). During the latter part of the former year, the oats used cost 5s. per boll (the same price as those used in the latter year); but I have not been able to ascertain the cost of oats per boll in the early part of 1849. I have, therefore, in the averages, supposed them to be 5s. per boll throughout the year.

The averages for South Hetton and Murton Collieries are all taken from the granary book; those for East Hetton Colliery, from the consumption bills sent to South Hetton every pay-day by Mr Joseph Forster.

The amount claimed to be saved in the cost of the lesser quantity of provender used in 1851 and subsequent years, as compared with the quantity used in 1849, with hay at 80s. per ton, and oats at 5s. per boll, the saving is really very much greater, the price of provender being nearly doubled since 1849, and, if taken into account, would amount to many hundred pounds a-year more;—thus, at South Hetton and Murton for 1856, the average was equal to six stones of hay per pay less on each horse than was used in 1849, which, with 152 horses, is equal to 148 tons 4 cwt. of hay per year.

The oats averaged 1¼ bolls per pay less on each horse than was used in 1849, which, with 152 horses, is equal to 4940 bolls of oats per year.

The difference between 148 tons of hay at 80s. per ton and 110s. per ton is L.222, 6s.

The difference between 4940 bolls of oats at 8s. 4d. and 5s. is L.823, 6s. 8d. Total gain for the year, L.1045, 12s. 8d., for South Hetton and Murton alone.

The above differences in the higher prices of provender has not been noticed in the averages, but the quantity only at the prices of 1849 and 1851.

If the extra price of provender were taken into the saving, with the lesser quantity used at all the collieries for the last five years, it would swell the amount to nearly L.18,000, and, large as the sum appears, I have no doubt but that L.600 a-year extra can be saved by a judicious use of leguminous seeds and bran, which we have been using for the greater part of the present year. For six months past no oats have been used for the horses at bank, either at South Hetton or Murton Collieries, they being fed exclusively upon beans, tares, peas, and bran, with a very satisfactory result.

It is also satisfactory to state that during the last three years, under the present plan of feeding, the loss of horses from disease, at East Hetton Colliery, has been less than in any one year previous to its commencement.

There are a few essential points to be acted upon in feeding animals upon the most economical scale.

1. Always use the best provender that can be purchased, it being ultimately the cheapest.

2. The kind and the quantity of the food given should invariably be regulated by the amount of labour the animal has to perform.

3. The quantity of each kind of provender given should be regulated by the price each article is per stone weight, and the amount of nitrogenous matter contained in each.

4. Always use as great a variety of provender, given mixed together, as is compatible with economy, especially green clover during summer.

I now proceed to a consideration of the second part of the report, viz.:—The analytical composition of the various kinds of provender used in the horse establishments at South Hetton and Murton Collieries, so far as to show the amount of nitrogenous matter contained in each, that compound being the constituent of vegetables, which in the animal economy is converted into muscular tissue.

The first question that arises in importance is, Does all provender contain equal quantities of nitrogenous matter in any given weight? What is the cost of flesh-producing matter per pound weight in each kind of provender used? Is it equally valuable as food in one kind of provender as in another? Will the animals continue in as good health, and do their work as well, if fed upon that provender which contains it in great abundance, and in which it is much the cheapest, as they would be if fed upon that which contains the least, and in which it is the dearest?

To the two former questions the following table will give an answer at sight. To the two latter, I purpose offering the result of my experience on the feeding of animals in the pits.

Before proceeding with the table, I ought perhaps to state that I have taken no one analyst as an authority, but have chosen rather to take the average of the following eminent chemists as the basis of the analytical table which follows, viz.:—Liebig, Dumas, Johnstone, Rayne, Payen, Penie, Boussingault, Scherer, Einhof, Furtemburg, and Marcet.

Analytical table showing the amount of nitrogenous matter contained in each kind of provender used at South Hetton and Murton Collieries, 1856:—

	Average cost per boll	Weight per boll	Cost of 100 lbs. weight of each.	Weight of Nitrogenous Matter in 100 lbs of each.	Cost of Nitrogenous Matter per lb. weight in each.
	s. d.	lbs.	s. d.	lbs.	s. d.
Tares.....	10 9	134	8 0...27	32	0 3...01
Peas.....	12 6	132	9 5...63	31	0 3...99
Beans.....	12 0	132	5 1...09	30	0 3...63
Bran.....	0 9½℔ st.	—	7...85	18	0 3...77
Barley.....	10 0	112	8 11...14	18	0 5...95
Oats.....	8 4½	82	10 2...56	14	0 8...75
Indian Corn.	13 0	84	15 5...71	12	1 3...47
Hay	5 4 ℔ cwt.	—	4 9...14	5	0 11...43
Linseed.....	3 0 ℔ st.	—	21 5...14	4	5 4 ..29
Straw.....	2 0 ℔ th.	96	2 1...00	1½	1 4 ..66

I have used the term "nitrogenous matter" in the sense in which it was used by Liebig, viz.: those parts of vegetables which contain nitrogen, or which are capable of being converted into blood, and appropriated to the forming and supporting of the muscles and softer tissues of the body, in contradistinction to those parts of vegetables which are incapable of being converted into blood, or forming organic tissues, but are used in the animal economy to promote respiration, and for the production of animal heat.

The feeding of all hard-worked animals upon true economic principles must be based upon the above facts, but regulated by the use the animal is wanted for, and a knowledge of the physiology of the digestive organs of the animal fed.

Thus, if we want to feed an animal for weight, as oxen or sheep, &c., or to make a horse up for the market, we must feed (if we do it the cheapest way) upon very different provender to what we should give an animal where the all-important want is strength, or muscular tissue and endurance.

On reference to the table above, it will be seen that the flesh-producing principle of oats cost 8¾d. per lb., while that in bran cost only 3¾d., that in beans 3½d., of hay 11½d., whilst that of tares or lentils is only 3d., or nearly two-thirds less than it is in oats, and nearly three-fourths less than it is in hay.

There is, at the present time, at all the collieries, 402 animals, equal to 289 horses, exclusive of those at the farms, which would, if fed on oats and hay, giving ten stones of hay, and 3 bushels of oats per week, consume 22,542 bolls of oats per year, which, at 8s. 4½d. per boll, is L.9439, 9s. 3d. per annum. These 22,542 bolls of oats would yield to the animals 258,782 lbs. of flesh-producing food.

The same animals would consume 18,785 cwt. of hay per year, which, at 5s. 4d. per cwt., is L.5009, 6s. 8d., and would yield to the animals 105,196 lbs. of flesh-making food.

If 363,978 lbs. of flesh-producing matter is required annually for the company's horses, and if it is given in the shape of hay and oats, it will cost L.14,448, 15s. 11d; if given in beans, L.5505, 3s. 3d.; in bran, L.5717, 9s. 8d.; and if given in the shape of tares or lentils, only L.4564, 17s. 9d.

The average cost of beans, bran, and tares, would be L.5262,10s. 2d., and the difference in the year to the collieries would be L.9186, 5s. 9d., the animals receiving the same weight of flesh-producing matter.

Horses, however, cannot be kept in health and good working condition on either of the latter kinds of provender alone. Beans are too heating and binding, tares are too bitter as well as binding, and the bran is too relaxing. These, then, cannot be used as food for animals separately, but if we use the heating and binding beans and tares, mixed with the cool and relaxing bran, we have then the cheapest and most nutritious food which can be given to animals, and I believe it to be as healthy a food as it is cheap and nutritious. It is, however, absolutely necessary that the beans should be roughly ground, bruising only is not sufficient for easy digestion, nor do horses, as a rule, eat them nearly so well, and many horses frequently leave partially bruised beans in the mangers, but I have never met with an animal that refused to eat them if ground.

Horses must have some more bulky food than beans and bran. However nutritious the diet, there must be bulk also, and if the expensive provender hay is not used, some other kind of provender equally bulky must be substituted. The habits of the horse in the natural state, the anatomy and physiology of his digestive organs, all lead to the conclusion that the large intestines of the horse are (unlike any other of the domesticated animals) true digestive organs—that the food does not stop in the stomach a sufficient length of time to undergo perfect digestion—that it is passed on to those immense receptacles, the large intestines—that the food requires to be there sufficiently bulky to act upon their coats—that it there undergoes a further change, becomes absorbed into the system, and assists in the support of the body.

There must be a certain bulk of food independent of its nutritive matter to act as the natural stimulus to those enormous and capacious tubes. If these tubes become empty, or nearly so, what is the result? Functional derangement, chemical decomposition is set up, gaseous matters are formed in large quantities, producing flatulency, or spasmodic colic, or both, pre-disposing the animals to inflammatory diseases of the digestive organs. In the horse, it is the large intestines more than the stomach which suffer from long abstinence of food.

Previous to 1851, the horses and ponies, as now, were out of the stable from 12 to 14 hours per day. The ponies, as a rule, had

neither water nor hay from the time they left the stable in the morning until they returned to it at night. The horses sometimes had water, but only a few got hay, and seldom, if ever, a night passed without one or more animals being affected with what is commonly called gripes; going without food and water 12 or 14 hours, nearly the whole of which time they are at work, the bowels become nearly emptied, the intestines more or less filled with gases, and yet the animals, notwithstanding this, were allowed to take food and water *ad libitum* as soon as they reached the stables. The result was frequently the loss of a valuable animal; for I find, on reference to my note book, that no less than three horses and four ponies died at South Hetton and Murton Collieries in less than six weeks, viz., between the 15th December, 1850, and the 24th January, 1851; yet no epizootic disease was present.

Since 1850, at every station, flat, and siding where animals stop, if only for two minutes, there is hay, and at all the principal places water; so that all the horses and ponies in the pits now get both hay and water several times during the working hours, and the result is, with an average number of 225 animals at South Hetton and Murton Collieries, during nearly seven years, we have only had eleven cases of colic, and eight cases of inflammation of the digestive organs, which is less than three cases per annum.

The advantages derived by using a certain portion of straw, cut up with the hay, is very great, especially in colliery establishments, where there is generally a very large quantity of straw, which really costs the company nothing extra, as it would be converted into manure in the fold yards, were it not used as food for the horses. Straw, then, is the bulky provender we want to mix with the more concentrated food, so as to use less of the 11½d. per lb. of the flesh-producing principle of hay.

It is especially necessary, therefore, that straw on colliery farms should be gathered and treasured with as much care as possible. It is not easy to over-estimate the advantage of using highly nitrogenized food for feeding pit animals, especially when the pits are working every day, as they have been of late. In feeding pit animals, it should always be remembered that both horses and ponies are almost constantly going from the time they leave the stable in the morning until they return to it at night.

If we couple this fact with another, viz., that where there is the greatest amount of exertion there will also be a corresponding consumption of muscle, and as muscle is little else than the flesh-producing properties of the provender consumed, converted into blood, and used in the animal economy principally for the formation of muscular tissue, it becomes a demonstrative proof how necessary it is (in an economical point of view) to use a large proportion of leguminous seeds as food for hard-working animals.

As no constituent of vegetables is capable of being converted into flesh, unless it contains nitrogen, it is believed that those flesh-pro-

ducing parts of vegetables, which contain the greatest amount of nitrogen, would be the richest in flesh-forming properties, we therefore get another advantage in the use of leguminous seeds. Dumas says that leguminæ, the flesh-producing properties of beans, peas, tares, &c., contain 3 per cent. more nitrogen than fibrine, albuminæ, glutinæ, or casein, the corresponding substances of wheat, oats, barley, hay, &c.

Before I conclude, I beg to call your attention to the importance of buying only the very best kind of provender, the value of which cannot be overrated. Hay, perhaps, stands first in importance. One ton of hay of first-rate quality is cheaper provender than two tons of only middling hay, at the same price; and bad won hay for horse provender is dear at a gift. The bad effects of inferior hay have come under my own observation in a very marked manner. It was used for nearly a month, and during that time twelve cases of colic occurred, and nearly all the animals became affected with an irritable cough. That hay was discontinued, and better given for a considerable period. There was not a case of colic, and the coughs gradually disappeared. After some weeks had passed over, the inferior hay was again used for some ten or twelve days, and during the last week of that time eight cases of colic took place, and the coughs again became apparent, which I imputed to the inferior quality of the hay. The same remarks apply strictly to oats of inferior quality, with this exception, that oats appear to become a powerful diuretic, acting first on the kidneys, producing an immense increase in their secretion, the effect of which is rapid loss of condition and great debility.

How this deranged state of system is brought about is not so clear, but must, I think, be produced by the presence of some acid in or upon the outer covering of the oats. Be this as it may, one thing is certain, that it is something which acts in a very deleterious manner upon the system of the horse, and that the only antidotes are alkaline bodies and the removal of the exciting cause.

The mischief, however, that is seen at the time is not all that happens; it becomes a predisposing cause for the development of the disease in other parts of the system, as well as of those organs first and more particularly affected.

In conclusion, I would briefly mention the value of green clover as food for pit animals. All other green provender can bear no comparison with it. It is not only a cheap and very nutritious diet, but appears to suit underground horses so much better than tares, less predisposing to flatulency, and the horses thrive even better upon it than upon tares or hay. It is also to pit horses a good natural and valuable alterative, indispensable to the general good health of pit animals.

It would, therefore, be a great acquisition if some stimulants, as a top-dressing, such as liquid manure, soot, or guano, were always applied to the best clovers on the colliery farms in the spring, so as to produce an early green provender for the use of the company's horses.

Third Report.

South Hetton Collieries, *April*, 1861.

(*To* Percival Forster, Esq., *Durham.*)

Dear Sir,—I beg to hand an account of the quantity of provender consumed by each horse, with the actual cost of the same for four years, at South Hetton, Murton, East Hetton, and Trimdon Grange Collieries, extending from the 1st of January, 1857, to the 31st December, 1860; also the comparative cost of the same, as compared with the prices and quantities used at the above collieries in 1849, and the sum total for ten years extending from the 1st January, 1851, to the 31st December, 1860.

South Hetton and Murton Collieries, 1860.

The average number of horses and ponies for each pay during the year was as follows, viz.:—86 horses, 34 large ponies, and 144 small ponies, making the same division with the ponies as in the report for 1856, viz., two small ponies equal to one horse, and three large ponies equal to two horses, giving an average of 180 horses for each pay during the year.

The average quantity of hay consumed was 17 tons 3 cwt. per fortnight, or 15¼ stones for each horse per pay.

The average quantity of oats consumed was 285 bolls per pay, or equal to 1 9-16th bolls for each horse per fortnight.

The average cost for beans, barley, bran, tares, clover, grass, turnips, maize, and linseed, was L.30 per pay, or equal to 3s. 4d. for each horse per pay.

Actual quantities used in 1860.

(Prices those of 1849 and 1851.)

15¼ stones of hay, at 80s. per ton . . .	L.0	7	7½
1 9-16 bolls of oats, at 5s. per boll . . .	0	7	9¾
Beans, bran, tares, clover, &c., &c., &c. . .	0	3	4
	L.0	18	9¼
Actual cost of provender consumed by each horse per pay	L.1	3	1

East Hetton Colliery, 1860.

The average number of horses and ponies for each pay during the year was as follows:—46 horses, 21 large ponies, and 72 small ponies, taking the same division as at South Hetton and Murton, giving an average equal to 96 horses per pay.

The average quantity of hay consumed was 9 tons 5 cwt. 3 qrs. per pay, or equal to 15½ stones for each horse per fortnight.

The average quantity of oats consumed was 170 bolls per pay, or equal to 1 6-8th bolls for each horse per pay.

The average cost of beans, bran, grass, clover, &c., &c., &c., was equal to 2s. 9¾d. for each horse per pay.

ACTUAL QUANTITIES USED IN 1860.

15½ stones of hay, at 80s. per ton . . .	L.0	7	9
1 6-8 bolls of oats, at 5s. per boll . . .	0	8	9
Beans, grass, clover, bran, &c., &c., &c. . .	0	2	9¾
	L.0	19	3¾
Actual cost of provender consumed by each horse per pay	L.1	4	4½

TRIMDON GRANGE COLLIERY, 1860.

The average number of horses and ponies for each pay during the year was as follows:—4 horses, 9 large ponies, and 37 small ponies, averaging the ponies in the same way as at the other collieries, giving equal to 28 horses for each pay in the year.

The average quantity of hay consumed was 3 tons 6 cwt. per fortnight, or equal to 18½ stones for each horse per pay.

The average quantity of oats consumed was 68 bolls per pay, or 2⅜ bolls for each horse per fortnight.

The average for grass, bran, and linseed, was equal to 1s. 6d. for each horse per pay.

ACTUAL QUANTITIES USED IN 1860.

(Prices those of 1849 and 1851).

18½ stones of hay, at 80s. per ton . . .	L.0	9	3
2⅜ bolls of oats, at 5s. per boll	0	11	10½
Grass, bran, and linseed	0	1	6
	L.1	2	7½
Actual cost of provender consumed by each horse per pay	L.1	10	7

The following table shows the comparative cost of each horse's provender, at South Hetton, Murton, and East Hetton Collieries, for four years, ending 31st December, 1860; also, the saving effected by the present plan of feeding, as compared with that of 1849, for ten years, being the length of time our present system has been regularly followed out at South Hetton and Murton Collieries:—

SOUTH HETTON AND MURTON COLLIERIES, 1849. Old Plan.	EAST HETTON COLLIERY, 1849. Old Plan.
Cost per pay, 28s. 8½d., or L.37, 6s. 5d. per year.	Cost per pay, 26s. 8d., or L.34, 13s. 4d. per year.
1857.	1857.
Cost per pay, 19s. 8½d., or L.25, 12s. 5d. per year.	Cost per pay, 17s. 11d., or L.23, 5s. 10d. per year.
1858.	1858.
Cost per pay, 18s., or L.23, 8s. per year.	Cost per pay, 18s. 2¼d., or L.23, 12s. 10½d. per year.

1859. Cost per pay, 18s. 1d., or L.23, 10s. 2d. per year.	1859. Cost per pay, 19s. 10½d., or L.25, 16s. 9d. per year.
1860. Cost per pay, 18s. 9¼d., or L.24, 8s. 0½d. per year.	1860. Cost per pay, 19s. 3½d., or L.25, 1s. 7d. per year.

From a comparison of the above tables, it will be seen that the difference in the cost of the quantity of provender used under the present system of feeding, as compared with the quantity used in 1849, at South Hetton and Murton Collieries, was equal in 1857 to 9s. less on each horse per pay, with hay at 80s. per ton, oats at 5s. per boll, and with 168 horses to L.75, 12s. per pay, or for the year L.1,965 12 0

For 1858, it was equal to 10s. 8½d. for each horse per pay, with 166 horses to L.88, 17s. 7d. per pay, or for the year 2,310 17 2

For 1859, it was equal to 10s. 7½d. for each horse per pay, with 165 horses to L.87, 13s. 1½d. per pay, or for the year 2,279 1 3

For 1860, it was equal to 9s. 11¼d. for each horse per pay, with 180 horses to L.89, 8s. 9d. per pay, or for the year 2,325 7 6

Total saving for four years L.8,880 17 11

For six years, as in 1856 report . . . 10,696 15 2

Total saving for ten years at South Hetton and Murton Collieries L.19,587 13 1

East Hetton Colliery.

It will be seen, by a reference to the foregoing table, that the cost of each horse's provender, for the year 1849, was equal to 26s. 8d. per fortnight.

Under the present plan of feeding, it was, in 1857, equal to 8s. 9d. less on each horse per pay, with 76 horses to L.33, 5s. per pay, and for the year to L.864 10 0

For the year 1858 it was equal to 8s. 5¾d less on each horse per pay, with 83 horses to L.35, 3s. 9¼d., and for the year to . 914 18 0½

For the year 1859 it was equal to 6s. 9½d. less on each horse per pay, with 88 horses to L.29, 17s. 8d., and for the year to . . 776 19 4

For the year 1860 it was equal to 7s. 4¼d. less on each horse per pay, with 96 horses to L.35, 6s. per pay, and for the year to . . 917 16 0

Total saving for four years L.3,474 3 4½

Brought forward,	L.3,474	3	4½
For six years, ending 1856, or per report delivered	1,814	6	2
For ten years	L.5,288	9	6½
South Hetton and Murton for ten years	19,587	13	1
Total saving on the quantity of provender used at the three collieries for ten years	L.24,876	2	7½

The above is the actual saving effected in provender on these three collieries in ten years by the present system of feeding and managing the horse establishments, over that existing during the year 1849, with provender at the same price. If the difference in the price of provender on the lesser quantity used during that period be taken, and which is a legitimate view to take in comparing the value of the two systems, it will be found that it averages, during the last seven years of the term to which these remarks apply, over L.1000 a-year, as I shall presently show, making the actual sum stand thus:—

On lesser quantity used in ten years	L.24,876	2	7½
The saving in the higher price of provender less used	7000	0	0
	L.31,876	2	7½

The average price of hay in 1849 was L.4 per ton, and oats 5s. per boll—the same as in 1851.

Taking 1857 as an average of the last seven years, we find hay to be 105s. per ton, and oats 7s. per boll. It will be seen that, at South Hetton and Murton, the average was equal to six and a-half stones per horse per pay less than was used in 1849, which, with 168 horses, is equal to 1092 stones per pay, or, for the year, 177 tons 9 cwts.

The oats averaged 1⅜ bolls per horse per pay less than in 1849, which, with 168 horses, is equal to 231 bolls per pay, or, for the year, to 6006 bolls.

The difference between 177 tons 9 cwts. of hay at 80s. per ton and 105s. per ton, is	L.221	16	3
The difference between 6006 bolls of oats, at 7s. per boll and 5s. per boll is equal to	600	12	0
Total for the year at South Hetton and Murton	822	8	3
The difference on the lesser quantity at East Hetton for the same year was	301	8	9
	L.1123	17	0

In my report to you, ending 1856, I held out the hope that a further considerable sum might be saved, in fact was being saved, by using a much larger quantity of leguminous seeds mixed with bran in preference to oats, which were much more costly in proportion to the amount of nutriment they afforded to the animals.

During the last two years we have not been able to carry out that plan so largely as when I wrote you in the early part of 1857. The reason of our not doing so, is the enormous increase in the price of bran and beans, and not because the principle of feeding hard-working horses on leguminous seeds and bran is unsound. To feed hard-working animals on the most economical scale requires equally as much discretion in the selection of the kind of provender to be used as the manner in which that provender is given, guided exclusively by the weight and price of the article in the market—always supposing the condition of the provender to be equally good

Thus barley was bought this year at 8s. 6d. per 112 lbs. weight, at the same time oats cost 8s. per 81 lbs., and yet barley is four per cent. richer in nitrogenous matter than oats, so that by using barley mixed with oats there was a clear gain of 31 lbs. weight of grain on every boll used, over what would have been effected had we fed upon oats exclusively, thus upwards of L.8 per fortnight was saved in using barley mixed with oats.

I ought, also, to add that the saving has averaged nearly L.800 per year on the lesser mortality of the animals during the whole ten years our present system of feeding has been carried out.—Your obedient servant,

CHARLES HUNTING.

A Severe Case of Indigestion. By A. C. MUIR, M.R.C.V.S., Dunbar.

THE occasional difficulty of removing obstructions in the intestines, by means of purgatives, is shown by the following remarkable case which I send you for publication, to show what a quantity of cathartic medicine may be given to animals with the best effects.

On the afternoon of Friday, the 1st of March, 1861, I was called to attend a plough mare which had taken ill that morning, the property of Mr Robert Cossar, hotel keeper, Dunbar. I found the mare suffering from indigestion, and ascertained that they had given her a bottle of oil, some turpentine, and laudanum, thinking it was only a gripe. The mare having tumbled about very much during the day, I immediately gave her aloes ʒviii., sp. æth. nit. ʒi., and followed it up with injections of hot water and soap, which gave her great relief; about seven o'clock the spasms went away, but no fæces passed; about half-past eight o'clock, she had an attack of enteritis, she was then bled and had tinct. opii. ʒi. calomel ʒss., and the abdomen was fomented with boiling water, and I also continued giving clysters. At nine o'clock I gave Fleming's tinct. aconit. ♏. x.; at ten o'clock, gave ext. belladonna ʒi., calomel ʒss.; and about a quarter past eleven the inflammation had abated. I gave the belladonna on account of the severe constipation. On leaving, I gave instructions to give her a clyster every two hours. I was sent for again about

twelve o'clock at night, when the mare was suffering from spasms. I had boiling water applied again to the abdomen, and administered sp. æth. nit. ℥i., æth. sulph. ℥ss., every time they came on. I left the mare about five o'clock in the morning in a quiet state, but no fæces had passed. I returned again about ten o'clock next morning, and no fæces having passed, I gave ol. lini. ℥xxii., ol. crotonis gtt. x.; the injections were continued, the mare having some little pain, and boiling water was also applied to the abdomen. I visited her again at three o'clock, no fæces had passed; I gave aloes ℥vi., sp. æth. nit. ℥i. I visited her again about nine o'clock on the morning (3rd March), no fæces had passed, I gave aloes ℥iv., calomel ℥i. Visited her again at nine o'clock at night, no fæces had passed; gave aloes ℥iv. Visited her again about ten o'clock on the morning of 4th March, no fæces had passed, gave ol. lini. ℥xxii., ol. crotonis x. gtt., on the afternoon of the fourth day not a particle of fæces had passed. The popular dose of Oi., sweet milk, and half a-pound of fresh butter was given. I also applied mustard to the abdomen, and also left aloes ℥vi., sp. æth. nit. ℥i., æth. sulph. ℥i., to be given about half-past eight o'clock that night, if no fæces passed. On the morning of the sixth, on making inquiry, I found the obstruction had been overcome, and I therefore went up about twelve o'clock on the same day, when she commenced purging; the injections had been continued, and she is now quite well. She was observed to be ill on the morning of the 1st of March, and she never passed any fæces until the 6th of March, at twelve noon. Notwithstanding the enormous quantity of medicine administered, the mare purged gently and was then relieved.

[Mr Muir's case is certainly a curious one. We recommend him to persevere with aloes and clysters in other cases. Twenty-eight drachms of aloes, 44 oz. and one bottle of linseed oil, with 2 drachms of calomel, were certainly purgatives enough to induce superpurgation; but cases like the above prove the tolerance for cathartics in cases of colic, and show that we can rely on nothing else, as the animals are not cured until discharge is effected.—Ed. *E.V.R.*]

REVIEW.

The Horse and his Diseases. By ROBERT JENNINGS, V.S., Professor of Pathology and Operative Surgery in the Veterinary College of Philadelphia. Illustrated. Philadelphia: John E. Potter. 1860.

THE above work favourably contrasts with other American publications on veterinary science. It indicates care in preparation, and knowledge on many subjects connected with veterinary science. It is not quite up to the day, when compared with many European works, and on some subjects remarkable deficiencies are observed, and which, by reference to the treatises by Blaine, Percival, and Youatt, might well have been supplied. Thus, under the head Roaring, we only have the following very imperfect account:—

"There are different stages of the same disease, arising from a thickening of the windpipe, or of the membranes of the larynx, rendering the passages smaller at the diseased parts. These diseases are generally the termination of neglected bronchitis, laryngitis, and all diseases of a pulmonary or catarrhal character; ulceration of the glottis (a portion of the larynx) is also a cause of roaring.

"If these diseases are caused by tight reining, the bearing rein should be left off; if they arise from other causes, there is but little prospect of benefiting the animal, except in cases where the thickened parts are in an inflammatory condition, when relief will be afforded by the application of mustard plasters or fly blisters to the parts affected."

The chapter on Diarrhœa is not a little remarkable. The author says:—

"This disease often arises in the absence of any inflammatory action upon the mucous surface of the intestines; and hence the distinction cannot be made by the ordinary observer between it and dysentery, if purging should be present. In order to obviate this difficulty, we recommend only such remedies as are calculated to answer either case, without the possibility of doing injury by the administration of medicines.

"The causes of diarrhœa are over-exertion, exposure to cold, drinking freely of pump or spring water, and over-doses of physic.

"For treatment, give in one pint of thin gruel, one ounce of prepared chalk, half an ounce of tincture of catechu, two ounces of tincture of opium, and one ounce of tincture of ginger. Gruel, starch, or arrow-root should be freely given; good, sweet hay is very advantageous, but no grass or bran mashes should be allowed."

It is very amusing to see introduced under such a head as diarrhœa, a picture of a prancing steed with "Omer Pacha, the Turkish Chieftain," written beneath, and evidently represented as on the battle-field, where it is not likely that either Omer Pasha or his horse would prove cowardice by being seized with the disease which their portraits illustrate.

Mr Jennings does not furnish a flattering insinuation as to the

success of his practice, when we find a dead horse with birds of prey flying around, representing "the end of pericarditis." The tendency to resolution in this disease is as marked as in any other, and it is by no means the fact, that "there is no treatment as yet known by which this disease can be reached."

We observe that Mr Jennings does not seem to have any exact notion of the pathology of the diseases he most frequently sees, and to call Big Head, Osteo-sarcoma, is to add one more disease to the many included by various authors under the same general term. Big head is Osteoporosis, and it not only affects the head but also the joints or ends of large bones. We very much doubt that the treatment recommended can be of any service, indeed we must condemn it entirely, and our readers may judge of the soundness of the recommendations by the following paragraph :—

"The treatment usually practised has been to make an incision through the skin, and insert a small quantity of arsenic into the wound; or else to score the face with a red-hot iron; which latter mode is said to have effected a perfect cure in many cases. Neither of these operations, however, strike us as being very scientific. The author's friend, G. W. Bowler, of Cincinnati, Ohio, has had some experience in the treatment of this disease, and has been very successful. The course pursued by him is to rub the swollen parts well once a-day with the following ointment: of mercurial ointment one ounce, and of iodine ointment two ounces; mix well together for use. Give internally, at the same time, one of the following powders night and morning: calomel one ounce, iodide of potassa two ounces, pulverized gentian root one and a-half ounces; to be made into twenty powders. The animal must be kept in a dry, well-ventilated stable, and the body kept warm so long as this medicine is given."

We repeat that, on the whole, Mr Jennings has proved in advance of his countrymen, but we might quote from every page evidence of imperfect knowledge, and bad principles of medicine and surgery. We urge him to study his subject more carefully before the appearance of a second edition.

EDINBURGH VETERINARY REVIEW

AND

Annals of Comparative Pathology.

PROCEEDINGS IN COUNCIL.

THE official report (p. 301) of the proceedings of the Quarterly Meeting of the Royal College of Veterinary Surgeons, held the 3rd April, inadequately conveys an idea of the important business transacted and initiated.

In our January number (p. 28) a conviction was expressed that, in accepting office as Examiners on the Scottish Board of the Corporate Profession, Messrs Lawson and Secker "had chosen to renounce an illegal for a legitimate position." Incidents have not been wanting to inspire a misgiving on the point, but we have at last the satisfaction of announcing that these gentlemen have adopted the only course open to them as men of honour, by assuring the Council that they will decline any invitation to act on Professor Dick's Board. It now only remains for Mr Secker and Mr Lawson to accede to the wish so uniformly expressed, by their colleagues on the council, for the employment of their friendly offices, to induce the proprietor of the Clyde Street establishment to reconsider a line of action which, while spreading schism in the profession, cannot fail to suggest serious doubts as to his sincerity for its welfare.

In accordance with a notice of motion by Professor Spooner, the council resolved to raise the fees of the Examiners from two guineas to three. The increase is deserved, and therefore, has our hearty concurrence, but we must dissent *in toto* from certain financial principles enunciated by the mover. If we be correctly informed, Mr Spooner considers that it is not necessary for the Royal College of Veterinary Surgeons to accumulate considerable funds, or to have an income much in excess of its annual expenditure for rent, Officers' salaries, and Examiners' fees. The Royal College should have a good Museum and Library, the foundation and maintenance of which require means. A building befitting the efficient centre of the profession in the Three Kingdoms would be very desirable, and admitting that the college is an examining and not an educational institution, we maintain that,

without in any manner or degree trenching on the province of the schools, the Council could, in imitation of the Colleges of Physicians and Surgeons, devote considerable funds to the advancement of scientific knowledge, and of the many questions affecting the social position of the profession as a Corporation, and the status of its individual members. Many of our readers will remember that, a few years ago, Professor Spooner was one of the principals in the movement which resulted in reducing the fee for admission to membership, upon examination, from ten to seven guineas. One of his pleas was in behalf of students of small means, a commiseration strangely expressed a few months later by the same gentleman causing a rise in the fees at the London Veterinary College from twenty to twenty-five guineas. By all means let encouragements be held out to young men of distinguished mental and moral endowment though of limited pecuniary resources; but can it be urged that ten guineas is an excessive sum to pay for the right of becoming a member of our profession, with life interest in all honours and privileges which may be conferred on, or acquired by, the Corporation? We have good reason to believe that the subject will shortly be re-introduced, and we entertain a confident belief that the majority of the council will decide on a financial policy consistent with the dignity and increased usefulness of the College.

Another very important matter was broached at the quarterly meeting by the President—that of preliminary examinations. As Principal Veterinary Surgeon Wilkinson has initiated this discussion from the chair, and as it is possible he may fully develope his views at the next annual general meeting, we leave the matter for the present with brief remark,—that it is time to consider, in all its parts, the system by which the Council discharges the high function entrusted to it by the Crown, of ascertaining the fitness of candidates for admission into the profession. It is very important that veterinary surgeons should speak and write plain English with tolerable correctness; and a knowledge of History, Geography, French, and Latin would be no indifferent addition, but it is pre-eminently desirable that a veterinary surgeon be able to diagnose and treat a case of lameness. Is the examination as now conducted a *bona fide* guarantee of such ability? A good general education is of incalculable advantage to men in all stations of life, but it can never become a substitute for the technical knowledge which is the essence of particular callings.

CONTRADICTORY CERTIFICATES AS TO SOUNDNESS.

THE case of M'Corquodale *v.* Wilson, published under the head *Veterinary Jurisprudence*, at page 302, is one, we believe, unparalleled in the history of horse causes. We have often heard horse people in Edinburgh and the adjoining counties, complain of double certificates on the same horse, and several of these have been shown to us, but we have not felt justified to publish them, as the circumstances of the cases were not fully before us; and so long as the public were in partial ignorance of such discreditable transactions, we protected the reputations of the persons involved. We have now, however, to protect the reputation of the profession, in exposing an inexplicable but apparently oft-repeated blunder, which strikes at the root of the veterinary profession. We have always urged that purchasers of horses should save themselves from difficulty and expense by consulting a veterinary surgeon. It is clear, however, that half-a-guinea, though a small sum for an honest and reliable opinion, is far too much to throw in the gutter. If a horse, condemned unsound, which a gentleman would wish to possess, is passed sound shortly after by the same veterinary surgeon; or suppose any other case, in which two different opinions may be freely given out, under similar circumstances, it is clear that the veterinarian cannot be regarded as a reliable source of information. But all honour to the many, for the resolute and praiseworthy manner in which corruption and bribery have generally been baffled; and we can mention the names of Field, Mavor, and hosts of sound veterinary practitioners, who have shown and do show good examples, and who raise the standing of our calling by unflinching honesty.

How does the case stand with Mr M'Corquodale? He buys a horse and puts him at livery. Professor Dick's opinion is obtained, and he grants the following certificate:—

"Veterinary College, Edinburgh, 17th April, 1860.

"I certify that I have examined a brown gelding, stated to have been purchased by Mr M'Corquodale from Mr Wilson, and find that he is unsound, being lame on the off fore-foot from a corn, and having a corn in his other fore-foot; also from spavins in both hocks, for which he has been fired; and I am of opinion that these diseases are of old standing.

(Signed) "WILLIAM DICK, Vet. Surgeon."

Wilson refuses to take back the horse; by common consent the

animal is sold, and a few days after, Mr Horsburgh of Dalkeith declares the animal sound. The case was then ripe for a prolonged dispute; and, on the 5th October, 1860, evidence is led before that most honest, sound, and impartial Sheriff—Andrew Jameson. The case has created some scandal, as report flew that Professor Dick had granted a second certificate on the same horse, and passed him sound. Accordingly, the document is produced in court, and the most awkward and unsatisfactory of all excuses is given regarding the contradictory opinions. Mr Dick says, "The gentleman, whose name was Beerhope, was not very particular about the inspection being minute." Mr Beerhope, however, says most distinctly, that he took the horse to Mr Dick, "who examined his feet carefully with his knife. I did not tell him not to be particular." The certificate is worded as follows:—

"Veterinary College, Edinburgh, 12th Sept., 1860.

"I certify that I have examined a brown gelding, six years old, belonging to Mr Beerhope, and find that he is sound. He has been fired for spavin, but I am of opinion that he will stand sound.

(Signed) "William Dick, Veterinary Surgeon."

Can we reconcile these two opinions. On the subject of corns Mr Dick recently stated, in a court of justice, that they were to be regarded as a "permanent unsoundness." On spavin, when the subject was brought forward at the West of Scotland Veterinary Medical Association, in answer to a question from Mr Cockburn, he stated that a spavin, whether attended with lameness or not, must always be regarded as an unsoundness. There can be no doubt that, if we are to have any well-defined rules for guidance in such cases, we must not be liable to such irreconcileable opinions as those expressed by Mr Dick in his contradictory certificates. The second is utterly incompatible with the first, and not recognising the horse is of no importance, as he recognised the marks of the firing-iron, and the spavin, which at different periods constituted, for the benefit of the client, unsoundness or soundness.

Mr Dick calls his second certificate guarded, after using the words "find that he is sound." How are veterinary students to learn lessons of cautious and guarded action, so essential in every profession, if they are to follow Mr Dick's example in this lamentable case!

THE ANNUAL GENERAL MEETING.

WHATEVER differences of opinion may be entertained relatively to some of the powers conferred by our Charter of 1844, it is undeniable that the provision for the annual meeting of the profession is intended to give every member the power of expressing an opinion, and voting upon matters affecting the existence and welfare of the general body incorporated under the Royal Prerogative. With very rare exceptions, the annual meetings have been small, and, considering that many of the attendants have been the same, year after year, it would be difficult to deny that a large majority of our brethren have not availed themselves of their constitutional privileges.

Whether rightly or wrongly, it is the practice of the British Government not to take the initiative in matters affecting sections of the community. Across the Channel, from the great landowner to the shoeblack, every one is certain of receiving some share of the attention of the *paternal* rulers; but, although we do not deny that the difference has some advantages, we are not disposed to admit that "they manage THESE things better in France." Sooner or later, those who are taught not to rely on the protection of others, learn the value of self-dependence as the greatest stimulus to self-help.

We are not at all inclined to take a gloomy view of the future, because the government of the profession in the past may have afforded proof of the truism, that what is everybody's business is very often cared for by no one. Self-government only admits of being theoretically appreciated, and practically carried out, after a long apprenticeship, and it would be absurd to depreciate the inestimable advantages of the representative and constitutional principle, on account of the proverbial slowness of its operation.

It is highly probable that if a supplemental Charter were now applied for, as at no distant period we apprehend it must be, the advisers of the Crown would be moved to demand an account of the past stewardship, which might be difficult to render, without the admission of indifference, if not of culpable laches, in the discharge of the high trust. We have little to hope from Parliament and Her Majesty's Ministers, until we give decided proof of thorough acquaintance with the public want, and of earnest determination to provide for it.

Our support of the Royal College of Veterinary Surgeons, on the broadest professional grounds, has been so hearty and unbiassed, that

we have hopes of not being misunderstood when, after reviewing the past, we suggest that it is the duty of every member of the profession to discharge conscientiously, and to the very best of his judgment, the constitutional functions with which he is invested.

ROYAL COLLEGE OF VETERINARY SURGEONS.

QUARTERLY MEETING OF COUNCIL.

April 3rd, 1861.—Present—The President; Messrs Braby, Broderick, Ellis, Ernes, J. S. Gamgee, Harpley, Hunt, Lawson, Secker, Silvester, Withers; Professors Spooner and Simonds, and the Secretary;—J. Wilkinson, Esq., the President, in the chair.

The minutes of the preceding meeting were read and signed. On the election of auditors, Mr Tegg of Stamford Hill was proposed by Professor Spooner, and seconded by Mr Silvester; and Mr Moss of East Street, on the proposition of Mr Ernes, seconded by Mr Gamgee, were unanimously elected.

Mr Harpley, Mr Withers, and the Secretary, were appointed the committee to prepare the Annual Report.

The registrar's report was read; it reported six deaths during the quarter: G. J. Vincent of Luton—December, 1853; J. Edgar of Dartford—May, 1827; W. Ridgeman, Liskeard, from a fall from his horse—January, 1842; J. Boston, Walworth—March, 1828; and H. R. Pritchard, Wolverhampton, both of whom died from inoculation of glanders—May, 1856. The balance sheet (quarterly) was then read; it showed a balance in hand, after defraying the expenses of the quarter, of L.409, 2s. 8d.; and on the motion of Mr Harpley, seconded by Mr Gamgee, it was received and adopted.

It was moved by Professor Spooner, and seconded by Mr Withers, "That in future the fees of the Board of Examiners be increased from two to three guineas for each attendance;" and it was unanimously agreed to.

A preliminary notice on the great desirability that an examination of the pupils, previous to their being entered as veterinary students, was laid on the table by the President.

ED. GABRIEL, *Secretary.*

SPECIAL MEETING OF COUNCIL.

April 17th, 1861.—Present—The President; Messrs Braby, Ernes, Jex, Hunt, Harpley, Moon, Withers, Professor Spooner, and the Secretary;—the President, J. Wilkinson, Esq., in the chair.

The change in raising the fees of the Board of Examiners from two guineas to three was confirmed.

The annual report having been read, it was, after a few verbal

changes and omissions, received and adopted, as was also the annual balance sheet.

On the question being raised as to the desirability if any of the officials of the college should be present at the first meeting of the reorganized Scottish board, it was decided that such was not desirable.

ED. GABRIEL, *Secretary.*

VETERINARY JURISPRUDENCE.

SPAVIN AND CORNS.—DOUBLE CERTIFICATE.

M'CORQUODALE *v.* WILSON.

In Sheriff-Court. (Before Sheriff JAMESON.)

Pursuer's Proof.

Edinburgh, 5th October, 1860.

Compeared John Pringle Copeland,—sworn. I am clerk to Mr Peter Moir, Nottingham Place. I remember of a brown gelding being sold on Wednesday, 2nd May last. He was advertised in the Saturday's *Advertiser* previous. He was brought up from where he was at livery. The pursuer had told me he was at Croall's stables. I produce copy of the entry of the sale extracted from our books. The charges are as usual, being L.1, 4s., which I deducted from the price I received for the horse, being L.14.

Cross.—The horse was in a very fair condition, and ready for work.

(Signed) JOHN PRINGLE COPELAND.

William Dick, Professor of Veterinary Surgery,—sworn. I remember of examining a brown gelding, on the 17th April last, at the pursuer's request. He was lame on the off-forefoot from a corn; he had a corn in his left forefoot also, and I gave the certificate No. 2 of 3-4 of process. I don't recollect of seeing this horse previously, but I saw him afterwards about five or six weeks. I gave a certificate on that occasion—I now see it. It is dated 12th September last. The horse was then going sound. I therefore did not take off his shoes, the more particularly that the gentleman, whose name was Beerhope, was not very particular about the inspection being minute. On the first examination I had both shoes removed. Corns come and go—they may be pared down or removed by treatment in some cases. Corns must be pared regularly in horses subject to them. The certificate I last gave was a guarded one, as will be seen from its terms.

(Signed) WILLIAM DICK.

Alexander M'Corquodale, merchant, Leith,—sworn. I bought the horse in dispute from the defender last spring. The price was L.35, and I got the receipt No. 1 5-14 of process. I saw the horse first at my office door, Leith, in charge of Mr Cowan's groom. The defender was not present. I got Mr Cowan's groom to look at him. I rode the horse out a little bit. I saw the defender in the evening. He said he was sound, and that I might take him to any veterinary surgeon. I said I was a pretty good judge myself, but I never examined him. I relied on the defender's statement that he was sound, and he repeated that I might take him to any veterinary surgeon in town. This was before my clerk paid the money. I don't recollect if the word warranty was used. There was no written warranty—some of my clerks were present. I told the defender to send the horse to Croall's stables on my account. This was done a week or two after. I requested the defender to keep the horse until I wanted him, and when I did so, I told Croall to send for him. The defender said he would charge for his keep. I saw the horse at Croall's shortly after he came. The hostler told me he was hide-bound, and I ordered him some physic. I called some days afterwards and

they told me the horse was not sound; that he was spavined. I told them to send him to a veterinary surgeon, and I ordered him to be sent out to the defender. I got Professor Dick's certificate produced, which I now see.

Cross.—The defender and I met in an omnibus, when some conversation took place about a horse. He said he had a good one. I think I wrote to the defender that I would like Cairns, who was Mr Cowan's groom, to look at him. The horse did not appear at all lame when I tried him at Leith; he went very nicely. The roads were very slushy, and it was difficult to see the points of the horse from that circumstance. Cairns approved of the horse. The defender offered me some days' trial of the horse before purchasing. I don't recollect how many. I don't think Croall's hostler said anything about the horse being unsound the first time I saw him at their stables. I ordered a ball of physic. I did not notice that the horse had been fired for spavin when I saw him at Leith. I relied so entirely upon the defender's honour and word that I did not think of having the horse examined. Cairns was present when the defender came down to Leith to see me about the sale. This was at my lodgings. The price was not paid then, but afterwards at my office. On both occasions the defender said the horse was sound. (Signed) A. M'Corquodale.

John Thomson,—sworn. I am clerk to Mr Croall. The account No. 3 of 5-14 of process is correctly made out. The charge for keep is L.1, 1s. per week. The horse in dispute was twenty-six days in the stables, being L.3, 18s. in all. This is the ordinary charge. I have the books with me containing the entry.
(Signed) John Thomson.

Alexander Durham,—sworn. I am a clerk of the pursuer. I know the defender. I remember of his being in the pursuer's office some months ago about the sale of a horse. I was present, and also Mr Simpson, the book-keeper. I don't remember the exact words, it is so long ago, but to the best of my recollection the pursuer said, "of course the horse is perfectly sound," to which the defender replied, "yes, I warrant it perfectly sound." The price was then paid. I saw the horse at the door some days before, when the pursuer rode him, but I heard nothing said. I am not quite sure, but I think I saw the horse afterwards with the pursuer.

Cross.—I did not hear anything said about a veterinary surgeon that I remember. (Signed) Alexander G. Durham.

Ebenezer Simpson,—sworn. I was book-keeper to the pursuer last spring. I was present when the pursuer bought a horse from the defender. The price was paid, and I wrote out the receipt. Last witness was also present. The defender said that he would guarantee the horse sound, and the pursuer said he would trust to his word. Nothing was said about inspecting the horse by a veterinary surgeon, that I heard.

Cross.—I don't think I saw the pursuer ride the horse afterwards. I have been residing in Perth. (Signed) Ebenezer Simpson.

Defender's Proof.

Compeared James Wilson, defender,—sworn. I met the pursuer one day in an omnibus last spring. He asked me if I had any horses at present. I told him that I had the very horse he required, as he said he was very timid to ride, and this horse was quiet. I told him he was a brown gelding, five years old, and that a child might ride him. He asked me to bring him on the Saturday that he might see him. He wrote me this, and added that, if Cairns approved of the horse, he would just buy him. The horse was then at Moir's Repository, and, having told Cairns, I took him to see the horse. Cairns mounted him and rode him down to Leith. When he returned, Cairns said that the pursuer was to take my horse, and that we were to go down to his lodgings that night. Accordingly we did this. The pursuer then said, as Cairns approves of the horse, I will just buy him He then asked if the horse was sound. I told him I had got a written

warranty when I bought the horse myself, but he might please himself and take eight days' trial of the horse, or take him to any stable he liked. I said I believed the horse was sound. The pursuer said there is no use of that. I look upon myself as good a veterinary surgeon as anybody. He asked me to keep the horse for a fortnight, for which he was to pay me a shilling a-day. At the end of that time I rode the horse to Croall's, and left him there, as I wrote to the pursuer. I heard no more of him until Croall's man brought him out with Mr Dick's certificate. I tried him in my entry, and he went quite sound, and I sent him back. I had gone to the pursuer's office at Leith the Wednesday after I saw the pursuer at his lodgings, as above-mentioned. I got the price at the office. The pursuer then asked again if he was sound. I said he was; and I told him he might satisfy himself, and he might take him to a veterinary surgeon. He said he relied upon my word and on his own judgment, as he was as good a veterinary surgeon as anybody. I am not a horse-dealer. I am a farmer near Cramond. I saw the horse again at the public sale. He was in good condition, but was covered with dirt and mud, and had not been groomed. He was run out on the hard road, and showed no unsoundness. I did not notice that the horse was fired for spavin until I had brought him home. If I had noticed it I would not have cared, as it is quite a common thing; does no harm when the horse is young. I drew the pursuer's attention to the fact that the horse had been fired for spavin, but he made no remark. The horse had no corns. I rode him ten miles one day without shoes on his fore feet. This was an Irish horse, and I know that the Irish horses are always fired when there is any symptom of spavin. When I had the horse, I have rode him sixty miles a-day across the country, and hunted with him. (Signed) James Wilson.

George Beerhope,—sworn. I took the horse in question to Professor Dick on the 12th September last, and asked him to examine it. He gave me a certificate after examining it thoroughly. I rode it down the street and up again. I had rode the horse before, when he was still the defender's property. I never saw anything wrong about him. He afterwards belonged to Mr Allison, Dalkeith. He and the defender ordered me to take the horse to Mr Dick, who examined his feet carefully with his knife. I did not tell him not to be particular. I did not care whether the horse was sound or not. I was quite indifferent, and had no interest in the horse. Mr Dick did not recognise the horse as one he had seen before. I am a potato-merchant, and took the horse to Dick's to oblige Mr Allison and the defender.

Cross.—I did not know Mr Dick had previously examined the horse. It was at Moir's stables I saw the defender, when he asked me to go to Dick's with the horse. I brought back the horse, and gave the certificate to the defender. Neither the defender nor Mr Allison told me to say to Mr Dick that he had seen the horse before. (Signed) Geo. Beerhope.

Alexander Cairns,—sworn. I am coachman to Mr Cowan, Royal Terrace, who is a cousin of the pursuer's. I was applied to about the horse in question last spring. The defender came to me and said the pursuer had sent him with the horse, and that he was to buy the horse if I was satisfied with him. I rode the horse to Leith, and took him to the pursuer's office. The pursuer mounted and rode him five or ten minutes, and said he liked him very much. I told the pursuer that the horse was very suitable for him, and I thought he was sound. The pursuer told me to take him back, and tell the defender to come down with me to his lodgings in Forth Street. I told the pursuer that the horse had been fired for spavin, but that it would do him no harm. The pursuer noticed this himself. The same afternoon I went with the defender to the pursuer's lodgings. The defender said to the pursuer he would either warrant him sound or allow him a week's trial, or to take him to any veterinary surgeon in Edinburgh. The pursuer said he was a good enough veterinary surgeon himself, that he wanted nothing of the kind, that he would take the horse as he was, and it was arranged that the defender should come to his office next Wednesday, and that he should keep

the horse for a week for him ; but after that the pursuer was to pay a shilling a-day for him. The horse had no corns that I know; he had a high action. I have had 30 years' experience of horses, and have frequently bought carriage-horses for my master, and for other gentlemen.

Cross.—We always get our horses examined before the price is paid. This is my master's practice. I afterwards saw the horse at the public sale, but I did not know him; he was looking very bad, his coat in bad order, and badly fed and groomed. (Signed) Alex. Cairns.

William Allison,—sworn. I am a coachbuilder in Dalkeith. I bought a brown gelding on 2nd May last at the public sale. It is the horse in dispute; it was badly kept, and in bad condition. This no doubt affected the price. I paid L.14 for him. I considered him sound when he was "run" out at the sale. The next day I got the opinion of Mr Horsburgh, Dalkeith. I made him aware that he had been sold under a dispute as to his lameness, and that I wished him examined carefully. He passed the horse as perfectly sound, and gave a certificate. I sold him on 27th September last for L.33 to Mr Hog, farmer, near Pathhead. I warranted him sound. I had perfect satisfaction with the horse while he was with me. The defender requested me to send the horse in to get him examined, and he sent him to Mr Dick's, and I afterwards saw the certificate ; the fee for which was paid by the defender.

Cross.—Mr Beerhope took the horse to Dick's at the defender's request, who just told him to take the horse to be examined. He did not say that Mr Dick had seen him before. I saw the horse's feet when he was taken to be shoed. There were no corns. I knew the horse before the defender bought him. I tried myself then to buy him, but as Mr Moir could not speak to the horse being steady in harness, I did not buy him then (Signed) William Allison.

The defender's solicitor stated that his proof was closed, with the exception of J. Horsburgh, veterinary surgeon, Dalkeith, whom he declined to examine until the pursuer's proof was entirely closed.

The Sheriff-Substitute adjourns the diet for the examination of Messrs Aitken and Horsburgh, and appoints the case to be put to the roll in order that another diet may be fixed for that purpose. (Signed) And. Jameson.

Edinburgh, 16th October, 1860.—Present, the Agents for the Parties.

Adjourned Proof continued.

Compeared, John Aitken,—sworn. I am a veterinary surgeon in Dalkeith. I remember of being at a sale in Moir's Repository, when the horse in question was sold. Mr Allison bought him. I rode the horse home to Dalkeith. I had an opportunity of seeing the horse run out at the sale. I saw that his hind legs had been fired for spavin. This horse was spavined. Spavin constitutes unsoundness in a horse. It is a disease of the hock joint. It is produced by overwork or a sprain, or anything that causes inflammation. It is the usual remedy to fire or blister for spavin. A horse may go well and perfectly sound after this, but still I would not certify him as sound. The defect cannot be removed. I one day saw this horse at the forge, and Allison asked me to look at his foot. The horse was then walking slightly lame on the left forefoot. There was a slight degree of heat in the foot. Corns constitute unsoundness in a horse. I saw no appearance of corns in this horse. I only saw one foot, and the smith pared it in my presence.

Cross.—The horse was fresh enough at the sale, but his coat was dirty. He went sound when run out at the sale. He walked sound to all appearance. I walked him all the way home, as I was leading another horse. Spavin generally lames a horse, but, after it has been fired, it may go sound to all appearance. When I see a horse has been fired for spavin, although he goes sound at the time, I would mention the spavin in any certificate I should grant. I have seen hunters who had been fired for spavin, for which gentlemen told me they had paid a

high price, such as L.100. The marks I saw were quite visible, and are so still. The slight lameness I noticed in this horse at the forge I believe was caused by a slight bruise, as by a stone in his foot. I noticed some discoloration round the foot of the "frog," on the centre of the hoof. Corns don't exist in the frog. They are usually under the heel of the shoe. They have the appearance of a round bloody spot. They may be pared down. They are caused by extravasation of blood. They may be cured for a time by taking the shoes off, and letting the horse go idle at grass. The sale was on 3rd May. The lameness I noticed would be about the beginning of August afterwards. I think this lameness was temporary. I saw the horse going sound, to all appearance, both before and after.

Being shown certificate, No. 22 of process, signed by Mr Dick, and dated 12th September, 1860, depones, I would concur in this certificate. I believe with him that this horse may stand sound now, from the time he has been fired; but still spavin is unsoundness, and was properly noticed in the certificate. I could have detected corns in *this* horse's feet by the knife, but I never tried it, and was not asked. If it was a very wet dusky day, his legs might be somewhat concealed, and also if his coat was rough. A horse once spavined is more likely to have another attack of spavin by violent exercise. Corns are best seen when the shoes are off; but, in this horse, his feet were so formed that corns could be easily detected by any one who knew horses, by the use of the knife.

(Signed) JOHN AITKEN, V.S.

Defender's Proof.

Compeared, James Horsburgh,—sworn. I am a veterinary surgeon in Dalkeith, and have had my diploma since 1825, and been all my life employed about horses. Mr Allison asked me to examine the horse in question, with a view of testing its soundness. I was told it had been sold under dispute, and I examined it particularly in consequence. I granted a certificate on 3rd May, 1860, which I now see. I certified the horse was perfectly sound, and that he never had spavin. There was a small discoloration, about half-an-inch from the hind heel of the off forefoot, which I thought was temporary. I was of opinion that he never had corns. The certificate contains a true statement of what I observed. Spavin causes lameness and constitutes unsoundness of the worst kind. I examined the joints of the hocks, because I saw they had been fired. I formed a decided opinion that spavin had never existed. Spavin enlarges the joints, and causes a stiffness from the bony deposit thrown out, which can never be entirely removed. Firing makes spavined horses better. We often see horses fired for spavin erroneously, who never had the disease. Lord Melville has a hunter for which he has been offered L.300, which has been fired on both *hocks* erroneously. Corns of any standing are never removed. I have seen the horse in question often. It was always sound, except for a short time in the end of July last, when it had a temporary bruise on the hoof. I again examined this horse on 3rd September last, and found him *quite sound*, and gave a certificate to that extent. There was no vestige of any corns. Being shown Mr Dick's certificate, No. 22 of process, I consider it a certificate of soundness. (Signed) J. HORSBURGH, V.S.

The Sheriff-Substitute declares the proof closed, and appoints the case to be enrolled for debate. (Signed) AND. JAMESON.

CERTIFICATES.

Veterinary College, Edinburgh, 17th April, 1860.

I certify that I have examined a brown gelding, stated to have been purchased by Mr M'Corquodale from Mr Wilson, and find that he is unsound, being lame on the off fore-foot from a corn, and having a corn in his other fore-foot; also from spavins in both hocks, for which he has been fired; and I am of opinion that these diseases are of old standing.

(Signed) WILLIAM DICK, Vet. Surgeon.

I hereby certify that I examined a brown gelding, with a white face, white hind-feet up to the fetlocks, and white hairs through the brown on the hind-quarters, flanks, and belly; is five years old. He has been coarsely fired in the hock joints of both hind-legs, apparently for spavin, which does not, nor ever did exist, and in these joints he is perfectly sound. There is a very small speck, half-an-inch from the corner of the inside heel of the off fore-foot, seemingly recently done either by a sharp stone or by a sharp instrument, but which is not a corn; and I consider the said gelding perfectly sound in every respect. He has very fine feet, and such as no man that is a judge of horses could find fault with.

(Signed) J. Horsburgh, Veterinary Surgeon,
Member of the Royal College of Surgeons.

Dalkeith, 3rd May, 1860.

Veterinary College, Edinburgh, 12th Sept., 1860.

I certify that I have examined a brown gelding, six years old, belonging to Mr Beerhope, and find that he is sound. He has been fired for spavin, but I am of opinion that he will stand sound.

(Signed) William Dick, Veterinary Surgeon.

Interlocutors, by the Sheriff-Substitute.

Edinburgh, 8th December, 1860.

The Sheriff-Substitute having considered the process, with the proof adduced, and heard parties, by counsel, finds it admitted that, about the end of March last, the pursuer bought from the defender a brown gelding by private bargain, and paid him the price of L.35; finds it proved that before the sale, according to arrangement, the horse was seen and tried by Alexander Cairns, on the part of the pursuer, and approved of by him; that thereafter the pursuer tried the horse himself, and that the defender, while he stated his opinion that the horse was sound, told the pursuer to satisfy himself as to the soundness of the horse, by taking him on trial for eight days, or having him examined by a veterinary surgeon, which he declined; further, finds it proved that at this time the horse bore visible marks of having been fired for spavin on the hind-legs, and that these marks were specially pointed out to the pursuer; finds, in these circumstances, that there is no proof of the defender having given an express warranty of soundness: therefore assoilzies the defender from the conclusions of the action, finds the pursuer liable in the expenses of process, of which allows an account to be lodged, and remits the same to the auditor to tax and report, and decerns.

(Signed) And. Jameson.

Reported 10th December, 1860.

Note.—As this is not a case where the horse is alleged to have been sold for a specific and particular purpose, it falls under the 5th section of the Mercantile Law Amendment Act, which provides "that the goods with all faults shall be at the risk of the purchaser, unless the seller shall have given an express warranty of the quality or sufficiency of such goods." It is proved that the defender, in answer to the pursuer's inquiry, said that he believed the horse to be sound. This took place when the parties met to arrange about the purchase, and after the horse had, as stipulated by the pursuer, been examined and ridden by the witness Cairns, his friend's coachman. On a second occasion, when the price was being paid, the defender again stated that the horse was sound; but on both these occasions he told the pursuer to satisfy himself, and proposed to him to take the horse on trial for eight days, or to have him examined by a veterinary surgeon. Now, although a warranty may be inferred from evidence, though the *word* is not used, the circumstances show here that the pursuer did not go upon the defender's opinions or representation, because (1), he had the animal examined by Cairns; (2), he tried him himself; (3), he was offered ample opportunity to make farther inquiry and trial, but declined, saying that he was "a pretty good judge himself,"

and that he was as good as a veterinary surgeon ; (4), the marks of having been fired for spavin in both hocks of the hind-legs were pointed out to him. The conduct of the defender was perfectly fair throughout. He made no statement that could throw the pursuer off his guard, but rather pressed on him to take the usual means of satisfying himself as to the soundness of the horse. He might, in perfect *bona fide*, think and say that the horse was sound, as that seems now to be the opinion of more skilful persons than he professed to be—*vide* Addison in the Law of Contracts, pp. 126 and 128. It is unnecessary now to consider the conflicting evidence in regard to the second question—whether the horse was actually unsound at the time of the sale—for, if there was no express warranty, the purchaser took the risk of all faults

(Initd.) A. J.

Interlocutor, by Sheriff.

Edinburgh, 8th March, 1861.—The Sheriff having considered the foregoing appeal for the pursuer and whole process, and heard parties by counsel, dismisses said appeal. (Signed) John T. Gordon.

Note.—The Sheriff is quite aware that a principle of great moment is involved in the present decision. But he confesses that he does not hesitate to decide as he now decides. He will not say that express warranty may not be given without the actual use of these words or synonymous terms. He is clear however, on the other hand, that express warranty is not constituted simply by the seller of a horse saying that the animal is sound; and in the circumstances of the present case, it is clear that the statement as to soundness by the seller cannot be valued higher than just as the statement of his individual belief at the time. And while the Sheriff is almost inclined to be satisfied that the seller was justified in having this opinion, he has, at all events, no difficulty in finding, in point of law, that the mere statement of this opinion cannot operate as an express warranty.

(Initd.) J. T. G.

PERISCOPE.

THE ROMAN BATH AS APPLICABLE TO TRAINING RACE-HORSES.

By the Hon. Admiral Rous.

(From Bailey's Magazine of Sports and Pastimes.)

The most wonderful discoveries have lately taken place in every branch of science, and the most extraordinary inventions and improvements in every item connected with the luxuries and the comforts of mankind ; general education has civilized and enlightened the great working classes. The islands are looking up ; even our domestic animals have improved in quality, and 20 per cent. in point of size, from poultry and pigs to sheep, cattle, and horses, owing to care and attention in breeding during the last century ; and nothing has retrograded but seamanship, emasculated by the introduction of steam ; sailors are numerous, but seamen are scarce. Lloyd's list of wrecks proves the melancholy fact ; but there is one profession on a humble scale which has made no progress, no improvement, for 150 years ; I mean the training of race-horses : and at the same time I must add my testimony that a more respectable or a better class of tradesmen do not exist than the majority of English trainers, who, from being in constant communication with gentlemen, imbibe liberal ideas, and prove themselves worthy of the highest trust and responsibility.

Thanks to Mr Urquhart (to whom this country is more indebted than to any living man) for the introduction of Turkish *alias* Roman Baths, a new era has arisen, the present barbarous system of preparing horses to race by drastic purgatives, hot clothing, hot stables, and four and five miles sweats will be ameliorated, and we may look forward with confidence to a revolution by the aid of

hot-air baths, which will enable a trainer to bring his horses to the post in first-rate condition without subjecting them to a destructive apprenticeship.

There was always a difficult problem to be solved, How is a trainer to prepare a horse to race? *alias* to get his inside clean and his muscles in full vigour without the assistance of strong purgatives, and galloping long distances under a weight of heavy woollen clothing. I do not deny the necessity of giving horses the strongest exercise, wisely adapted to their age and condition. It is proved that you can lighten a horse's frame as well by the operation of a hot-air bath as by a four-mile sweat; and the question arises, which is the best practice to get them into condition? My belief is, that a smart two-mile or a three-mile gallop with the horse stripped, carrying a light weight, and a hot-air bath afterwards, is more beneficial to a horse's lungs, and, no doubt, to his legs and sinews, than a four-mile gallop under heavy clothes. Try it on a jockey; let him take his usual walk of nine miles under sweaters; and the next time walk half the distance, and then take a hot-air bath; I fancy he will find himself a lighter, a stronger, and a wiser man after the second process. Owing to the exhaustion of a four or five-mile sweat, a horse is only fit to walk the following day, and many horses are annually disabled by this severity; but after a hot-air bath a horse is fit and ready for any task. I therefore pronounce the hot-air bath a most powerful and valuable auxiliary; with this assistance you may bring an infirm horse to the post which would break down in two orthodox four-mile sweats. With respect to the sound horses, why should not we try to keep them sound? Is not prevention better than cure?

The Roman bath invigorates a horse's frame, gives increased action to his liver, improves his appetite, cleanses the pores of suppressed perspiration, and fortifies the skin from extreme heat and cold; the joints become more supple, the sinews more elastic, and the heart, lungs, and kidneys, being freed from fat, horses are able to take the strongest exercise, without suffering from internal fever. Rheumatism, sore shins, and cutaneous eruptions are speedily subdued by hot air. Under this system no horse ought to be exercised in heavy clothes. In my opinion, it is always objectionable to give a horse a sharp or very long gallop when he is clothed, and looking to hot air as an agent, we may keep our horses sound for thrice the estimated period of their present efficacy; the veterinary surgeon and the saddler will send in diminished bills; this will balance the expenses of the bath, and will save large sums of money to the proprietors of race-horses.

Of all animals in the world there are none better endowed by nature to endure the vicissitudes of climate than a horse. From the burning deserts of Arabia to the coldest regions of Europe, Asia, and America, they enjoy the most perfect health and vigour. Why are we, then, to treat them in this temperate clime like exotic plants? If, from the day a foal is dropped, he is never shut up with his dam in a close hovel, except during a severe frost; if the same practice be adopted after he is weaned till he is taken into the stable to receive his education, there is very little risk of his catching cold, cough, or any disease, all those indispositions arising from young stock being confined in a close, unwholesome box, and then being suddenly exposed to cold winds.

When the yearling colt is removed to a well-built warm stable, you would suppose that, if he enjoyed perfect health during his days of liberty, in the open air, rolling on the wet grass, if this mode of life agreed with him, and added daily to his growth and strength, that, as far as fresh air was concerned, you would allow him all the advantages which nature can bestow. From a life of freedom, housed in an open box, inhaling pure, fresh air, he is confined with his head tied up to a manger in a close stable, the windows jealously opened by day, as if the air was injurious to his health, and carefully shut on an average of 13 hours during the greatest part of the year. As a foal he roughed it in the paddock during the cold winds of February; 18 months afterwards he is clothed and shut up in a warm, close room. Before the colt is reconciled to his first lessons of servitude, a woollen rug is strapped round him, to add to the naturally inflamed state of his blood; and, to crown his misfortunes, from having always had free access to water, the

trainer restricts him to two draughts per diem ; it signifies nothing whether the weather is hot or cold, the stable regulations, like the laws of the Persians, are inviolable. The trainer drinks ten times a-day if his throat is dry, but he never calculates that his horses may be more thirsty than usual if the thermometer in his fusty stable rises to 90 deg. It has been proved over and over again that if horses in a stable have free access to water they will not drink as great a quantity as when water is offered to them twice a-day (excepting in sultry weather) ; because the horses, having more sense than their master, drink a whole pailful to lay in a stock to meet the exigencies of feverish thirst, and the interior demands which nature may require in the long interval of destitution. This saves trouble, but it is in direct antagonism to the principle of training men to run or to fight, who are never allowed to take a large draught.

Thus, the raw material, in the shape of a healthy, well-grown colt, 18 or 19 months old, is introduced to the care and tender mercies of the groom. After the usual process of leading him about, lunging him, backing him, his proud spirit bends to the yoke ; from gentle exercise, he is abruptly called upon to mend his paces, and within 14 weeks he is tried with older horses, from 600 yards to half-a-mile. A trainer may justly complain and object to these early preparations. He generally quietly acquiesces, owing to a natural curiosity to find out a trump, or to be enabled to select the wheat from the chaff. As far as these early trials are concerned, the experiment can now be made with half the risk of destroying the colt, or, in other words, laying the seed of future unsoundness, by using the hot-air bath for absorbing his internal fat and superfluous flesh, without having recourse to strong medicine or long preparatory gallops.

At two years old the trainer considers it necessary to clothe the unfortunate colt more warmly, on the principle that he becomes more tender as he advances in age (a novel doctrine) ; and he is not satisfied until he makes the horse uncomfortable by a flannel or a woollen hood when he goes out to exercise. A showman thinks it right to dress up his dancing-dogs or his monkey at a fair—that is quite admissible ; but a hood makes a horse susceptible of cold. It is laying a trap for a sore throat. A hood is excusable in a railroad van, for all other purposes it is only good for trade. Ask a trainer why he uses it ; you will receive an unmeaning answer.

If their predecessors quarrelled with fresh air, and stopped up the keyholes for the pure love of ammonia, which propagated the disease of roaring, and made a great many horses blind, there was one redeeming point—they took out their horses twice a-day to exercise, for eight months in the year, which gave two opportunities for re-ventilating a putrid stable. This practice was in vogue for many years after I went to Newmarket, and highly approved : it is now changed, because it disturbs the domestic felicity of the trainer.

You would imagine that, during the height of summer the horses would be out at daybreak, when the dew makes the grass pleasant to their feet, and that the work would be over and the stables made up and horses fed by 7 o'clock. Not at all. Instead of exercising their horses in the cool of the morning, and taking them out a second time at 6.30 p.m., to walk them for an hour, when the stables might be thoroughly cooled, the trainers consider it a more judicious plan to commence work at 7 in the morning, and to keep the horses out till 10 o'clock, frequently the hottest time in the day, before the breeze springs up. By this policy they evade the trouble of saddling their horses a second time.

When oxygen is a scarce article in the stable, and ammonia gets the ascendancy, horses suffer from lassitude, loss of appetite, and a dull coat significant of disease. This is expected, as a matter of course, and parried with calomel and aloes.

When a horse's coat breaks in October, and race-horses are deeply engaged, a cough is heard, and coughing runs like wildfire through the stable. What is this owing to? The stable temperature charged with ammonia, the warm clothes, flannel bandages, hoods, and deleterious physic have won the battle ; every horse's skin impregnated with suppressed perspiration was susceptible of disease, and they have caught what the trainers have so studiously engendered. I have known

more horses coughing in a stable at Newmarket than in all the cabs from Hyde Park Corner to Somerset House, simply because the cab-horses stand for 14 hours in the open air, and race-horses are shut up for 21 hours in a hot stable. The laws of nature cannot be defied with impunity.

The trainer now has a lucid interval. He turns the sick horses into open boxes from a temperature of 65 to 40; the cold air invigorates them, the fever is checked, the cough ceases, and the horse gets well in a week. Woe to the invalids if they are still confined to the warm stable. They may be on the sick list for months. But the racing season is over and the money is lost. Again the trainers fall back to the ancient system, and all experience is lost upon them.

It is not to be wondered at that these horses suffer from catarrhs, and that their legs fail. If you talk to a trainer, he will say, "I must keep my windows shut during the night or the horses will be ill. They must be warmly clad, or they will catch cold; they must be well physicked, or they will fly to pieces when I put them in hard work; and they must have hard work at any risk, otherwise they won't stay a distance. If their legs show symptoms of weakness I must support them with plaisters, elastic cloths, and flannel bandages." The answer is simple. If Miss Nightingale, of undying fame, and our cleverest doctors insist upon the windows of an hospital containing patients with every disease being kept open night and day, why are trainers to be more learned than they? If the fresh air at night is not salubrious to a healthy horse, why do you strip a horse labouring under violent inflammation, and turn him out in the cold air, as the only means of saving his life! Every year tells the same sad tale of coughs and illness; they are considered as dispensations of Providence—no fault of the trainers. It is their *kismet*, like the fatalists of the East, who have great contempt for drains to carry off the filth of their cities, and thereby patronize the plague.

Warm clothing is useful after a long, severe race (a dead heat), and the horse is required to run a second time; then a trainer thinks it advisable to discontinue its use. He will walk his horse stripped in a cold wind; and there he stands with his coat dry and wiry, the heat driven back to his lungs and heart. An American trainer covers his horse up with clothes, and moves him about till he breaks out in a profuse sweat. This brings the enemy to the surface; the heart and lungs are relieved, and if the horse dries up well after he is rubbed down, he is fit to run for his life when the English trainer's horse is suffering from internal fever. An Affghan trooper comprehends this theory, and acts upon it after a long, fatiguing march; to a common English groom it is a parodox. He will clothe his horse when he ought to be stripped, and he will strip him when he ought to be clothed.

If horses be free from organic diseases, water, hot, tepid, or cold, variously applied, and hot-air baths, will cure every complaint incidental to the equine race; cold, wet linen bandages, covered with oilskin and woollen cloths, will cure sore throats more readily than mustard poultices or blisters, and leave no mark. Fever, influenza, and colic may be subdued by cold, wet linen sheets round the body, and the evaporation carefully guarded by blankets till the patient perspires profusely, and the disease comes to the surface, then drench him well with cold water when you strip him; let him drink cold water, rub him well dry, and keep him in a cool, well ventilated stable. This water system is cheap and simple, and acts promptly on the disease without impairing the horse's natural vigour, and there are no bills to pay. If the horse's constitution is like iron, he may recover by the aid of medicine in the last stage of debility.

My training theory is, that no race-horse should be clothed beyond a linen or a cotton sheet, either in the stable or at exercise, excepting during a cold winter, when a simple rug may be allowed both indoors and when his work is confined to a straw bed during a frost. It is an outrage on common sense to say that an old horse is more tender than a sucking foal. The hot-air bath, by cleansing and opening the pores of the skin, restores its tone and reinstates the animal in his original purity to despise the changes of the weather, the trainer having exerted all his ingenuity to make him tender, helpless, and susceptible. As the hot air

stimulates the action of the liver, physic will seldom be required, and then in very small doses. When a yearling comes into the stable fat and fleshy, instead of giving him extra slow work, and keeping him out four hours, it saves a great deal of trouble to physic him well. Extra physic is less troublesome than extra work, and it is supposed to be all the same thing in the end.

From the 15th of March to the end of the racing season, the horses should be exercised twice a-day, and be kept out altogether four hours, instead of the present system, from two hours and a half to three hours at one interval. They should always have access to water, or, according to the American system, it should be offered to them in small quantity six or seven times in the course of the day. Most horses you cannot feed too highly when they are in strong work, and my belief is, that no three horses require exactly the same food and the same exercise.

A stable should be built on brick arches, unless the foundation is chalk or limestone. Rooms about 17 feet in height, with large windows, ventilated near the ceiling by hollow or perforated bricks; no mangers to the stalls or boxes; large, white wooden basins, hooked on to staples in the wall for the corn—the said basins to be taken away and washed when the horses have fed—and in every stall a fixture for a water pail. There are three appendages necessary to a perfect establishment—a dormitory for the lads, who should not be allowed to sleep in the stable, because when the night air is cool they will shut the windows; a Roman bath; thirdly, a weighing-machine, to register every horse's weight after each operation of the hot air, and after every public race or trial; a wooden grating over the floors of the stalls, fitted with iron hinges to trice up to the sides in order to be washed and purified, would be a great improvement, and there would be no necessity for straw litter. The stable plans of Mr Knightley, Cannon Street, London, are admirable, and afford the most perfect ventilation without a cold current of air.

All the cavalry depôts in Great Britain, Ireland, and India, ought to be fitted up with Roman baths capable of containing six horses. In India there are two indigenous complaints which destroy 40 per cent. of our cavalry horses. The first is a cutaneous disorder called *burnsatee*, from the Hindostanee word *burusaria*, relating to this disease, peculiar to the rainy season; it generally attacks horses picketed out in wet ground. No doubt the disease is propagated by an insect, and is contagious. This fearful complaint is of a tubercular nature; the skin swells, then ulcerates until regular sores are formed; no part of the body is exempt, but it generally commences in the legs, and is considered incurable. The second, a cold night air called the wind-stroke, which paralyzes a horse's loins; and I have heard of every horse in a stable being disabled in one night. They rarely recover. It is very probable that the hot-air bath would cure both these terrible diseases, and at a very small expenditure millions of rupees may be saved.

To a hunting establishment a bath is a most valuable acquisition. During a long frost horses may be kept in the most perfect condition. After a hard day's work it is a most powerful restorative to man and horse, and nothing would surprise me less than to hear that the kennel lameness in hounds (which, I presume, is rheumatism) can be cured by the same process.

Finally, old-fashioned trainers will condemn the bath without condescending to investigate its results, for nothing is so intolerant or presumptuous as the prejudice of an ignorant man. It reminds me that when steam was in its infancy, a celebrated stage-coachman hoped to be hanged, or something worse, if they could ever travel so fast upon an iron rail for 20 miles, as he could drive his old chestnuts. Of course this hot air, so potent in its effects, may be abused like any other valuable gift. I leave to clever and experienced men to define where its use ends and abuse begins. Grooms have much to learn, still more to forget. And as the farmers of 1861 ridicule the system of husbandry in 1820, so will the trainers of 1870 amuse themselves with the errors of their predecessors in 1860.

ON RED-WATER IN CATTLE.

By George Poyser, V.S., Ashbourne, Derbyshire.

[Premium—The Gold Medal.]

(*From the Journal of Agriculture*, March, 1861.)

(*Continued from page* 247).

The researches of Messrs Andral and Gavarret into the comparative physiology of the blood, have shown that an improvement in the breed of animals always tended (*cæteris paribus*) to increase the proportion of coloured blood corpuscles, and to diminish that of its fibrine. We also find further indications of the same inverse ratio between the amount of fibrine and the perfection of blood in the facts, that there is little or no fibrine in the blood of the fœtus, none in the egg, and less in the blood of carnivora (who feed on it) than of the herbivora. We also find from Liebig that fibrine (chemically) is albumen to which oxygen has been added, and that it is highly probable it may be derived from a waste of tissue, or an oxidation of blood.

The *white corpuscles* are supposed to have their origin in the epithelial cells, found in the interior of mesenteric glands; they are spherical in shape, have a diameter about the 2500th part of an inch; they have a nucleus containing granular and fatty matters, and have a power of changing albumen into plasticor. organisable lymph. They are compressible, and so can pass through small vessels in the first stages of inflammation; they are more numerous in animals whose blood is very nutrient, which may be considered as only augmented nutrition Their ripeness and rupturing, liberating the neuclei, is supposed to be the origin of the red globules. From their affinity for the coats of vessels, to which they are often found adhering, they appear to be intimately connected with nutrition.

Red corpuscles.—It is to these bodies that the blood of all vertebrated animals owes its colour; they stand next to albumen and the white corpuscles in importance; they are of greater specific gravity than any of the other components of the fluid.

About 130 parts are found in 1000 of the blood of males, and 120 in the same quantity of the blood of females. They may be slightly increased or decreased without materially interfering with health, but their vitiation is highly injurious. In all mammals, except the camel, they resemble in shape a flattened disc ; their size in the cow is about 4500th part of an inch in diameter; they are smaller in the herbivora than in the carnivora, and possess a nucleus only during embryonic life. They are composed of globuline, hæmatosine, salts of blood and iron, on which latter their colour was erroneously supposed to depend, but in hæmatosine is found the colouring principle. They appear to be influenced by the presence of oxygen and other gases, and are thought by some to be the carriers of oxygen into, and carbonic acid gas out of, the system; they have a power of absorbing oxygen, and become of a bright scarlet colour under its influence. Hence they are thought to be mainly instrumental in the production of animal heat.

They are easily dissolved by water, yet they remain uninjured in the fluid portions of the blood. This seems partly due to the presence of saline matter, and partly to that of albumen, for they are alike insoluble in a strong solution of salt and a highly albuminous fluid.

We have shown, in the course of our remarks, that on the saline alkalinity of the blood the solubility of its albumen and fibrine depends—that in no other medium than a saline albuminous fluid can the red corpuscles maintain their integrity and functions—that the specific stimulus of cell-growth is a material identical with, or convertible into, the natural contents of such cell—that the densities of fluids are altered by the quantity of salts. Thus it is that endosmotic laws are fulfilled, cell-developement effected, nutrition and secretion carried on. We see, therefore, that the serum of blood constitutes the universal material of growth, not only for the cell-developement, which constantly advances within these fluids, but also for all organic increase within the body; hence this material

being directly derived from food, may become impregnated with any morbific influence, or an unhealthy digestion, and assimilation lead to the production of deleterious organic acids. Thus from the complex arrangement of the elements of vegetable substances, the blood, by its own powers of development, becomes the cause of further effects, and generates its own decay.

And, although we know the blood to be exceedingly jealous of the introduction of any substance foreign to its composition, and we cannot but admire the contrivances of nature to sustain its purity, yet, nevertheless, the annals of pathology inform us of numerous instances and methods in and by which its vitality is partially or totally destroyed. We have the absorption of poisons from the skin and tissues, or through the lungs, and the poisonous and prejudicial effects of aliments, &c. It is easy, therefore, to see how, by the quality of food or abnormal assimilation, the baneful effects of substances may be exerted on the blood, to end only in the production of disease.

Having prefaced our article with some of the leading characteristics of blood, we feel that we shall be able to convey a clearer notion of the pathology of the disease under consideration. We do not think it within the province of this report to recapitulate the ideas that have been entertained by various writers. The opinions and the means of cure have been very various; but still a very striking coincidence has run through all the accounts we have read with regard to the treatment—a fact we shall refer to under the head of remedial and preventive measures—that is, the recommendation of the use of common salt.

It is to Professor Simonds, of London, that we owe the most enlightened views of the true pathology of the disease. With him, we hold that this is a disease of the blood, primarily caused by derangement of the stomachs or bowels interfering with the function of the liver; or that this organ is first affected, ceasing to purify the blood and secrete a proper and due quantity of bile, thereby disturbing the process of assimilation, inducing an altered condition of the vital fluid, giving rise to the separation of its albumen and hæmatosine by the kidneys.

That the urine of animals affected with this disease contains albumen, and that, too, in large quantities, is shown by boiling, or by the addition of nitric acid to it; either of which processes will cause an abundant precipitation of white coagulated matter, well known to be albuminous. Its colour is also dependent upon the presence of hæmatosine and iron, for both can be detected in it. Blood as blood is not present, or we should be able to detect its fibrine, and, by the microscope, the characteristic red corpuscles; for, as we have stated above, they are capable of maintaining their integrity in saline albuminous fluids.

Post-mortem appearances, so far as our researches have extended, have not revealed any injury of the vessels of the kidneys, whereby these bodies could escape. The abnormal appearances on examination have invariably been an hypertrophied, dilated, and discoloured condition of the principal conduits and secerning vessels of the gland, plainly indicating that the globules are broken up previously to their transudation by the organ. The liver is generally engorged and softened, and the whole mucous surface of the small intestines present appearances of inflammatory action more or less intense. The tissues in the neighbourhood of the kidneys and bladder, and, in fact, the lining membrane of all the principal blood-conduits throughout the body, appear as if coloured by a solution of chocolate. This tinge is doubtless caused by the abnormal condition of the blood, followed by an undue stimulating effect; hence it is that in the progress of this affection we find the symptoms which increase most in intensity are those which indicate the state of the nervous and circulatory systems.

If this urine be allowed to stand for a day or two, it not only exhales a very offensive effluvium of decaying animal matter, but deposits a sediment which consists chiefly of the matter derived from tissue, epithelial cells, and scales, also crystals of the oxalate of lime, and the triple phosphates of the alkalies.

It is usual for the organic acids introduced into the blood through vegetable organisms, as neutral or acid salts, to be as completely burned (oxidised) as in a reverberatory furnace; but, to effect this process, the presence of a free alkali in the blood is essential. And, as alkaline carbonates are known to predominate in

the blood of herbivora, so ought we to have, in a normal condition of the urine, carbonates of the salts of the organic acids. Hence it is that Dr Golding Bird has demonstrated that the presence of the oxalates in human urine can be clearly traced to mal-assimilation; and as the channel of egress for the phosphates from the blood of herbivora are the bowels, their presence in the urine is another proof of organic derangement.

Symptoms.—The disease of red-water is usually ushered in by diarrhœa, which is doubtless an effort of nature to rid herself of an irritant, after which the functions of the bowels generally become entirely suspended; and we are curious to know how far this suspension of their functions may be the cause of the disorder. But it is seldom, very seldom, that this early symptom of the disease is noticed. The skin now gives, or it may have given, for some time past, indications of a deranged condition of the alimentary tract, by a staring unhealthy appearance, and a harsh ungenial feel. The animal separates from the rest of the herd, is often very restless, has a haggard expression of countenance, arched back, and a distended, or lank condition of the abdomen. In no disease more than in this do the eyes become so speedily sunken, and retracted within their orbits, or the tissues of the body more rapidly wasted, giving the animal a very dejected appearance. It is highly probable that the animal may be found lying down, as there appears an inclination to assume a recumbent position, caused doubtless by lumbar sympathy with the derangement of the kidneys.

If we examine a subject of this disease more closely, we find a difficulty of breathing, pulse accelerated, artery contracted—giving a hard vibratory motion to the pulse—the secretion of milk is diminished, or entirely suspended, the act of rumination has ceased, the nose dry, and other indications of fever. We generally find the bowels constipated, the small portions of dung occasionally voided, are hard, and coated with mucous; and the urine of the characteristic colour giving the name to the disease. The peculiar pulse, and the increased or morbid sensibility of the animal, are caused, we think, by the poisoned blood, by its containing more than its due proportion of fibrine, or less of its proper diluent the serum, and by its having in this vitiated condition a stimulating effect on the heart and arteries, analogous to inflammation. Hence our great object in treatment is to dilute the blood with a saline albuminous fluid.

As the disease progresses, respiration becomes more and more hurried, the pulse quicker, smaller, and of a wiry character; the urine is voided in smaller quantities, and at more frequent intervals, and urination seems to cause more pain and irritation. The urine is blacker in colour, and thicker in consistency; the animal moans, gives other evidence of abdominal pain, and about the third or fourth day sinks, vitally exhausted, a victim to the malady.

Sometimes during the progress of the disease we have seen an intense thirst arise; the animal drinks freely, and seems relieved; functional activity is partially re-established, and the affection seems to assume a less acute character.

Under these circumstances we have witnessed rumination again partially performed; the pulsations decrease in frequency (although they and the heart still preserve the vibratory motion), respiration is relieved, the bowels slightly or fully respond, the urine becomes thinner, and more free from gritty matter, but still dark in colour, its smell less disagreeable, and its alkalinity slightly increased. Although nature seldom fails (with a little medicinal aid, or by good nursing alone) to re-establish a normal condition, she may yet succumb, or structural alteration of the kidneys may ensue.

This sub-acute form of the disease may be the primary state of things,or it may follow an acuter stage. It has been considered by most writers as a distinct affection, requiring different treatment; but to this we cannot subscribe, as we consider it dependent upon the same functional inactivity and derangement. Surrounding circumstances or collateral treatment, may, however, have mitigated the severity of its rapid and untoward effects upon the system.

As the liver and its secretion are on all hands allowed to play an important part in the digestion of food, the function of the bowels, and the purification of the blood, it is only a natural conclusion that disease must, even from the first,

to some extent exist in this organ. But, on the other hand, we have the evidence that the distinct and unassociated affections of this viscus are not followed or accompanied by anything analagous to red-water. So are we justified in seeking elsewhere for complications, as well as a cause. According to our pathological experience of all organs in the body immediately connected with the more important offices, the liver is most tardy in yielding unequivocal indications of a derangement of its function. It is therefore in the sub-acute form alone of the affection, we have time for a development of the evidences of hepatic complications. Now is it, then, that we have the visible mucous membranes of a yellow colour; the white, and even the coloured proportions of the animal's skin bear the same jaundiced aspect, while the urine will often mark with a yellow stain anything white.

(To be continued.)

La Clinique Véterinaire. Vol. i. 1861.

I.—The Treatment of Chronic Hydrarthrosis by the Injection of Tincture of Iodine. By Urbain Leblanc.

The paper before us is the report of four cases of considerable distention of the hock-joint, cured by iodine injections. The attention of the profession is respectfully called by the writer to the alleged superiority of this method over other systems of cure adopted in similar circumstances. Severe cases, quite incurable by the application of the hot iron or the much vaunted liniments employed in such cases, have been found to yield completely to the operation of the iodine injections. Among other veterinarians who have renounced other measures for the adoption of the iodine injections, MM. Verrin of Rouen are particularly referred to, having frequently used for a long time the liniment geneau, and are now fully convinced of the vast superiority of the treatment by iodine.

In operating, M. Leblanc generally has resort to the simplest measures of restraint only—the use of a twitch and the holding up of the opposite limb, or the anterior limb of the same side, he has in most cases found sufficient, even in the case of very irritable horses; in certain cases, nevertheless, casting of the animal must be had resort to. Preparation of the subject is not always necessary, since in most cases M. Leblanc operated at once on seeing the animal, and without any previous dietetic or regimenal measures having been adopted; in certain cases, too, he permitted the animal after the operation to return at once to its accustomed diet, without any modification whatever. He does not mean, however, to condemn the system of preparing the subjects previous to operating, as he has in certain cases himself adopted this precaution. In puncturing the soft tumour, the most salient point of the tumour is selected, as here the skin and walls of the sack are generally more tense and attenuated, especially when the limb is extended. Into this part the trochar is introduced, first penetrating the skin, and then slowly introduced through the walls of the sack by a gentle, vacillating or spiral movement, until the synovial cavity has been entered. This last precaution is insisted on as of vital importance, as any laceration or severe irritation of the walls of the cavity prove excessively injurious.

The first case reported occurred in a bay mare, six years old, having an enormous distension of the left hock-joint. It was twice operated on, with the interval of a month. At the second operation, the fluctuation showed the presence of a large quantity of fluid; the tumour soon became firm throughout its entire mass, and resolution took place gradually. Three months after the treatment was commenced, the animal was put to work, and has continued sound in active work ever since.

The second case was in a well-bred horse, seven years old, of very irritable temperament, and affected also in the left hock. After casting, injection of iodine was resorted to, and was followed as usual by considerable swelling of the hock and induration of the synovial tumour, followed by progressive resolution, which continued for 1½ months. A new injection was now employed, and in two months more a complete cure was established.

The third case, taking place in a seven-year-old horse, remained two months at the infirmary after the operation, at which time some enlargement still remained. He was, however, set to do ordinary work, and in about a month a perfect cure was effected.

The fourth case was in a large carriage horse, having an enormous distention of the capsular ligament of the hock. As usual, after the first operation, the tumour became hard, and the fluctuation ceased. After a lapse of two months it again began to soften on the inner part of the joint. A new injection was accordingly had resort to, and one and a-half months later the animal was put to work, notwithstanding the joint operated on was not quite reduced to its natural size. This afterward took place, though the animal was kept at full work.

In all these cases analogous lesions existed, articular thoroughpins, (*vessignon chevillé articulaire*), and all responded in an equally happy manner to the iodine injections.

II.—Tincture of Various Essential Oils as a Vulnerary. By Aug. Zundel, Veterinarian at Mulhouse.

The opinion of many physicians that alcohol acts as an irritant upon wounds, is referred to by M. Zundel as very erroneous, while among those who have employed it with benefit, he instances among the ancients Hippocrates, Galienus, and others; among the moderns, Velpeau, Lacar, Lecœur, and Roux. M. Zundel himself says, he has not obtained from cerates, from camphorated pomades, or even from glycerine, the advantages resulting from his employment of alcohol, and the tinctures. Among the actions of alcohol are—the coagulation of albumen, the arresting of hæmorrhage, and the moderating of suppuration, but it is also especially useful in surgical wounds, particularly those of the frog. The benefits obtainable from the tinctures are not, however, due to alcohol alone, but much depends on the essential oils and resins obtained from the various aromatic agents contained in them.

The tincture commonly used by M. Zundel, and which he has found at once cheap and efficient, is composed as follows:—

℞	Vol. oil of lavender,	aa 10 grammes.
	„ „ rosemary,	
	„ „ thynn,	aa 5 „
	„ „ aspic,	
	„ „ bergamot,	aa 2 „
	„ „ citron (distilled),	
	Alcohol at 92° centgrade,	1 litre.

This preparation is not used in the pure condition, but in a state of greater or less dilution, with water according to the nature of the wound, or the delicacy of the tissue to which it is applied, in some cases a salt of copper or lead is added, in others a little of the tincture of tannin or aloes. The wounds treated by such applications are kept in a state of healthy action, the transformation of albumen into fibrine is prevented, excessive suppuration is reduced, flabby granulations are repressed, and cicatrisation goes on in a healthy manner.

It may be employed in all wounds, whether large or circumscribed, provided these do not affect the bones or the articulations. As regards the strength of the application, more of the tincture is employed in a wound affecting fascia than in a simple muscular wound; more in the latter than in a lesion of the cellular tissue only, while less still is wanted in one affecting only the skin. For a skin wound from 25 to 30 grammes may be added to a litre of water, whereas in some of the deeper seated injuries as much as 50 or even 75 grammes may be added to the same amount of water. In contused wounds subacetate of lead is added, and compression employed, while in some deep wounds the sulphate or acetate of lead may be added.

Among the particular wounds treated in this manner are fistulous withers, wounds of the feet in ruminants, and in all gangrenous wounds, in which last it exerts a true antiseptic action, besides its other stimulant properties as observed in ordinary wounds.

III.—Regurgitation and Vomiting in Ruminants. By M. E. Weber, Veterinary Surgeon at Paris.

M. Weber has been impelled to take up this subject, as one that has not received at the hands of veterinarians generally that consideration to which it is entitled. The return of aliments through the mouth may depend on a great number of causes, some of which are to be looked upon as indicating danger, while others are not to be so considered. It is evident, therefore, that, any considerations that will enable as to diagnose correctly the origin of any such case will be of the highest importance, inasmuch as we may thereby be enabled to come to a just prognosis of the malady, and resolve the question—always important in cases like the present, in which the subject represents a certain money value—whether it is most advisable to subject the animal to treatment, or to have him slaughtered, while he may as yet be utilized as food. In the last-mentioned circumstances the practitioner has the consolation, that if he has not effected a cure, he has at least been useful in obviating the greater loss that would otherwise have accrued.

It is not easy in all cases to correctly diagnose the cause of this symptom, yet as this can be done, to a certain extent, our author endeavours to mark out the most prominent distinguishing characteristics. Girard drew attention to the occurrence of a morbid, and a regurgitative vomiting in ruminants, and in this was followed by Dupuis, who looks on the three first stomachs as simply dilatations of the œsophagus. Regurgitation then takes place when the rejected fluid has only been in the stomach, or one of these its dependencies, while true vomiting takes place when the aliments ejected have actually entered the true stomach.

In considering regurgitation, M. Weber divides it into two varieties.—1st, It may take place from abnormal dilatation or accidental obstruction of the œsophagus: 2nd, It may consist of aliments thrown off from the natural dependencies of the œsophagus as the rumen or reticulum. The accidental dilatation of the œsophagus he considers much more common than is generally supposed, though few such cases come before the veterinary public. The dilatation may be formed by the mucous membrane alone, which becomes attenuated, and passes through the muscular coat, so as to constitute a hernia or it may involve the muscular tissue as well, the fibres of both being, in this case, distended beyond the natural condition. The causes of this are set down as the presence for some time of hard and voluminous strange bodies in the œsophagus, or it may be from attempts made to pass on such by kneading or by the probang. When this condition exists, the symptoms are somewhat analogous to those of choking; there is generally hoven, dribbling of frothy saliva from the lips, and frequent vomiting, especially after drinking. The animal will sometimes appear anxious to feed, but the aliments seem never to pass the œsophagean pouch, and are invariably rejected in greater part. The character of the ejected matter shows that it has not undergone even the first steps in digestion. It consists of food more or less masticated, but mixed only with saliva, and in no case exhaling a sour odour. Several instances of this malady are cited, among which may be noted one recorded by our countryman Mr Reid, in the *Veterinarian* for 1843. M. Weber also records an instance which occurred in his own practice. In this case the autopsy showed a dilatation of the thoracic portion of the gullet, capable of holding as much as eleven pints of water, and involving both the mucous and muscular coats. Under the head of "Obstructions of the œsophagus by tumours," are noticed chiefly those situated in the coats of the organ, and obstructing the passage of aliment either by their own size or by their causing an abnormal constriction of the circular muscles of the canal at the part in which they are situated. A case is related of vomiting from the presence of an abscess in one of the pillars of the œsophagean canal, and one from the presence in the gullet of a pellet of wool.

Under the second head, "Regurgitation from the natural dilatations of the œsophagus," the first allusion made is to the natural ejection of food from these organs. Morbid regurgitation may occur first from simple indigestion with

hoven, various examples of which are cited. Next an interesting case is recorded from the pen of M. Railard of Montargis, in which this condition occurred in connection with a protrusion of the reticulum into the thorax through an artificial opening in the diaphragm, and the presence of a nail passing from the reticulum to the heart. There is transcribed also a statement from a work by M. Boizy on pericarditis from the presence of foreign bodies, in which frequent eructations are mentioned as among the symptoms of the malady. Lastly, a case recorded by Festal, in which regurgitation coexisted with atrophy of the left lobe of the lung, as he supposes, from injury to the pneumogastric nerve in bleeding.

Vomiting properly so called only takes place when the matter thrown out has previously entered the true stomach, and is to be distinguished from those ejections previously mentioned by the fine division and the acidity of the vomited materials. It has been found to exist almost invariably with serious disease of the abomasum, and particularly with cancer of the pylorus. In this last condition vomiting is considered as a valuable diagnostic symptom, being accompanied by general fever and a certain amount of constipation. Cases of this kind are quoted from the *Recueil* for 1829. One by M. Caileau in the *Journal Pratique* for 1830 is referred to, and a case is reported by M. Cruzel. A case of gastro-enteritis, with attendant vomiting, is recorded by Drouard in the *Recueil* for 1842. In the *Veterinarian* for the same year, Mr George Stowel records a case in which vomiting took place from the administration of an irritating agent in a case of hoven; but in this, as in several other cases noted, the report does not warrant a decision as to whether the vomiting was real or simply regurgitation.

In summing up, M. Weber submits, 1st, That the most common form of so-called vomiting is simply regurgitation; 2nd, That the divisions of this must be carefully noted, as, if dependent on dilatation of the œsophagus, it is incurable, while, if from simple indigestion, it is easily relieved by remedies calculated to overcome that condition; 3rd, That true vomiting is always a symptom of a dangerous malady, and is accompanied with more or less prostration, a quick hard pulse, intermittent tympanitis, want of appetite, suppression of milk, rapid prostration, and death. Vomiting does not in this case, as in that last noticed, occur only where the rumen is largely distended, but almost constantly, and the rejected matters are not in large masses, but firmly disintegrated, and exhale a very markedly acid odour. More extended investigation is still, however, called for in this branch of veterinary science.

IV.—Diabetes in the Lower Animals: especially in a Monkey and in a Dog, fed exclusively on Flesh. By M. U. Leblanc.

A disease, analogous to polyueria in man, has long been known in the lower animals, and especially in horses, under the name of diabetes. In this case there is, however, no well-marked alteration in the composition of the urine, as in that disease in the human subject. Professor Lassaigne, indeed, lays down the following distinctions between the composition of it and of healthy urine. 1st, It is more watery; 2nd, It contains free acetic acid; and, 3rd, There are no earthy carbonates, yet the essential character of true diabetes, the presence of sugar, is entirely wanting.

Moiroud is quoted as having seen this malady most frequently among the horses of plasterers, an experience homologated by that of Leblanc. A peculiar idiosyncracy disposes to the development of the malady, but our author has not noticed that any particular variety, or quality of food, exercises a marked influence in its production; Moiroud's statement is, however, quoted, setting forth that badly preserved and musty hay, and germinating oats, are causes of its outbreak. Leblanc has observed that horses taking large quantities of water are most subject. Accordingly it is found most prevalent during the extreme heat of summer when the thirst is greatest, and more common in hard-working animals with free access to water than in horses kept as a luxury, and in which the liquids given are in less amount and better regulated.

The symptoms are first frequent and abundant passing of urine, which is abnormally clear, and intense thirst, followed by loss of appetite, with great and increasing languor and weakness. The mucous membranes become pale, the mouth dry and clammy, hair gets rough, losing its gloss, the skin gets dry, he licks the walls or floor, and has depraved appetite, preferring to eat his litter. Emaciation goes on with great rapidity, especially if the subject is kept at work, and the symptoms may be said to continue the same, but with varying intensity, throughout the whole course of the disease.

The autopsy shows nothing peculiar other than the complete discoloration of the muscles of the liver and of the kidneys.

As regards treatment, Verheyen and Solleysel have used Armenian bol with success. Faber, like the Germans and Swiss, used tincture of cantharides with advantage; Delwart, creosote. Leblanc employed aromatic and other waters with the animals' drink, but no agent proved more beneficial than a decoction of linseed substituted for pure water as a beverage, and to this he added magnesia in those cases in which the patient showed a tendency to lick the walls. When the cases resisted this treatment, the best results followed the administration of the aqueous extract of rhatany.

The most interesting part of this paper is, however, a report of two cases of saccharine diabetes, occurring in a dog and a monkey respectively. The first case was in a large six-year-old greyhound, fed exclusively on flesh. He drank much, urinated often and copiously, ate more than usual, became rapidly emaciated, was constipated, with dry clammy mouth, harsh dry skin, and staring coat. The case was treated by linseed decoction with imperfect success, and 8 grains of the extract of rhatany were then given daily, causing diminution of the urinary secretion, also reducing the enormous appetite and increasing emaciation, the thirst meanwhile continuing as before. At this time—about two months after the onset of the malady—the creature began to cough, and the discovery was made that the urine contained sugar. Accordingly the treatment recommended by Bouchardat in similar cases in the human subject was adopted. The meat diet was continued, 15 grains of carbonate of ammonia were given morning and evening a short time before feeding, the patient was kept in a warm place with a woollen rug over him, and was brushed energetically several times a-day to activate the functions of the skin. Mucilaginous injections were employed to overcome the constipation, and two drops of laudanum daily administered. Under this treatment the appetite diminished, but the thirst continued, and emaciation progressed rapidly. By giving linseed decoction, the appetite was somewhat restored. The animal, however, became gradually worse, the coughing became more violent, and one day he picked up a bit of an old shoe and suddenly swallowed it; some hours later the debris of this body was rejected by emesis, but the vomiting continued, accompanied by bloody stools, and some days afterwards the creature died. No autopsy was made. This case proves that amylaceous articles of diet are not necessary to the development of diabetes *mellitus*, although such agents have been found in the human subject to aggravate the disease. That the whole diet was animal there can be no doubt, as the dog was under the immediate care of M. Leblanc.

The next case occurred in a monkey, and continued for the space of six months, when it ended in death. It was fed on all manner of aliments,—bread, biscuits, legumes, fat broths, milk, flesh, and confections. He drank every instant if permitted, and passed large quantities of urine, which was repeatedly analysed by M. Poggiale, Member of the Academy of Medicine, and Professor of Chemistry at Val-de-Grace, and found to contain sugar in large amount.

The treatment consisted in giving bicarbonate of soda, and the water of Vichy. The diet was flesh, fat broth, and gluten bread. Linseed decoction was prescribed, but beside this the animal drank large quantities of pure water. This, like the former case, was unsatisfactory, the creature being alternately better and worse, and succumbing at the end of six months.

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AND

Annals of Comparative Pathology.

ORIGINAL COMMUNICATIONS AND CASES.

Lectures on the Principles and Practice of Shoeing, delivered during the Summer Session in the New Veterinary College, Edinburgh. By JOSEPH GAMGEE, Sen.

LECTURE II.

IT being my object in the present course to furnish, in the most concise and available form, information which may at once admit of practical application; it is inexpedient that I should attempt to treat many details and accessory questions with all the fulness I might wish, if time and opportunity permitted. For similar reasons, I shall be compelled to avoid as much as possible references to many authors from whom I differ. My practice affords you the means of testing the merit of my teaching, and when, by and by, I have conveyed to you what I believe to be the truth, you will be in a position to exercise your independent judgment in criticising, what a lengthened and very varied experience has convinced me to be, error; bearing in mind, however, that the acquirement of personal experience is necessarily a slow process, I shall not leave you with my own unsupported assertions, but strengthen them, when treating the most important parts of the subject, with such quotations from the works of those who have preceded me, as are faithful to nature, and proportionately instructive and reliable.

According to the plan rapidly sketched in the Introductory Lecture, we shall proceed to investigate the structure of the horse's foot, arranging its study in three sections: 1*stly*, The hoof—the horny protecting covering; 2*ndly*, The bones which constitute the solid structures; and 3*rdly*, The intervening connecting and elastic tissues—the cartilages, ligaments, tendons, blood-vessels, &c. Each of these sections admits of, and, indeed, for accurate study, requires, further subdivision; thus, taking first in order the hoof, we find it composed of three distincts parts, 'Wall,' 'Sole,' and 'Frog.'

THE WALL, as its name implies, forms the boundary. It is the outer framework of the whole foot as seen when the horse is standing,

more particularly so from a front and lateral view. This part of the hoof was called by Mr Coleman the crust—a baker-like epithet, as Bracy Clark ironically designated it—which has been adopted by all adherents of the Coleman school, and is in general use amongst farriers. Wall (*muraille*) is the term employed by continental writers, and that with an evident appropriateness, from its position and strength, qualities which fit it to protect from external injury the enclosed highly vascular and exquisitely sensitive structures.

Each division of the hoof is composed of horn, differing in texture in different parts. The horn which enters into the composition of the wall is denser than that of the other divisions. It is of a fibrous nature—the fibres taking a longitudinal direction from the upper part or coronet downwards, are distinctly visible, resembling hairs glued together, and are endowed with an elasticity and density which admirably fits them to embrace the complex structure, support weight, and resist wear. The density of the horny fibres is greatest as they approach the surface of the wall, the outer layer acting as a cuticular covering to defend the contained organ from external agencies, such as a dry atmosphere, excessive moisture, &c., performing, in fact, the same function as the cuticular covering does to the true skin of all animals.

The shape of the wall, necessarily involving the shape of the foot, has been a matter of some controversy, on which we may dwell all the more profitably since it is frequently one of the debated points in actions at law instituted for the purpose of questioning a horse's soundness. Mr Bracy Clark[1] asserts that the figure of the wall "will be found to be truly that of a cylinder," and he refers in corroboration to a figure in an accompanying plate representing a cylinder, of which a section is marked off as representative of a hoof. Except as a diagramatic exposition of the author's meaning, the illustration is valueless, because a creation from fancy, and not a copy from nature.

The teaching of Professor Coleman on this point was even more unsatisfactory. He pronounced the form of the fore-foot of the unshod colt to be that of a cone, of which the base or ground surface was always circular, measuring alike across the quarters, as from toe to heel ; it was, however, the notions entertained of the functions rather than form, that made the late Professor's teaching most inconsistent. His description does not agree with practical information derived from the study of a large variety of horses' feet. The fact is, that organic forms very rarely, if ever, can be compared to geometrical figures, and mathematical rules are as seldom applicable to the interpretation of animal functions. It is quite true that the anatomist recognises some essential characters and forms with wonderful constancy, which, however, is not inconsistent with con-

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[1] *Hippodonomia*, 2nd Edition. London: 1829. P. 33.

siderable secondary differences; witness men's heads and hands, as well as horse's hoofs,—you never find two precisely alike. It will be after examination of the different parts that you will be able to contemplate the foot in its entirety.

The depth and strength of the wall is greatest at the point or toe. Posteriorly, on each side, it is inflected inwards, so as to form a thinner internal wall. These inflections have been described as separate organs, and named the *bars*, in accordance with the function erroneously ascribed to them of propping open the heels. On these beautiful inflections of the wall we shall say more, after describing the sole and frog. Internally, the wall is lined with numerous thin horn plates, running parallel from above downwards. (Horny laminæ of Coleman; keraphylla of Bracy Clark.) These plates are described as from five to six hundred in number, and form the chief attaching medium between the sensitive foot and the hoof. The connection is completed by a corresponding number of plates, which Coleman called the *sensitive laminæ*, and Clark *the podophylla*. These horny and sensitive plates are so interlaid as to form an extensive surface of attachment,—a most intimate and powerful bond of union.

The horn-leaves, or keraphyllous structure, line the wall throughout its internal surface, including its inflected parts. The sensitive plates, podophyllous structure, extend over the whole anterior and lateral surface of the coffin bone, and also over the cartilages laterally and posteriorly inflected, forming the attachment already referred to, with the keraphyllous or horny laminæ, lining the wall. On the inner surface of the wall, round its upper circumference, is a concavity, which it is important you should notice attentively, to form an accurate idea of the function it discharges in the economy of the foot. It is named the *cutidural* cavity, as it receives a band of corresponding form, to be hereafter noticed, termed the *cutidura*. Below, it terminates where the horny laminæ begin, while its upper, and gradually thinned, margin is continuous with the skin.

The Sole is the division of the hoof we have next to consider. Viewed in connection with the wall, it may be regarded as the floor of the foot. It is an irregular thick plate of horn, adapted to fill up the great inferior opening of the wall; it may be said to consist of two oval pieces united in front, but diverging, and widely separated posteriorly, and presenting to the ground a more or less concave surface. Its outer margin, approaching the wall, declines, then rising again, it dilates to a broad surface for attachment to the inside of this part of the wall, mixing with the keraphylla, (Clark). In virtue of the above-described connection with the wall, the sole still more resembles a floor in character. As the horny laminæ by growth, descend further down than the sensitive laminæ below the coffin bone and cartilages, they are intimately interwoven with the sole, so as to constitute a very strong junction. As Mr Clark has rightly expressed it, the outer margin of the sole is dilated, that is, it is thickest where it forms the attachment with the wall, and par-

ticularly so round the anterior region ; the thickness and strength of the bond of union is increased by a deposition of horn of peculiar plaster-like texture, secreted for the purpose of filling up the interspace between the sole and wall, and, unlike these, not readily distinguishable into flakes or fibres. The different structures of horn thus combined, harmonize admirably to ward off concussion from the sensitive part, to resist the effects of wear, to form the bearing surface to which the shoe is adapted, and afford firm and safe hold for the nails.

The horn, which is secreted and deposited between the wall and the sole, deserves a distinct notice in this place, as I am not aware that its nature, and its importance in the economy of the foot, have been adequately dwelt upon by any author. It forms a main-stay to the whole hoof, and is three or four times as abundant at the point of the sole as it is at its posterior angles. Viewing the foot as it is prepared for the shoe, this intermediate substance is in great measure the cause of the apparent difference of thickness in the wall at its different parts, the thickness appearing much greater relatively at the point or toe, as compared with the lateral and posterior parts, than is really the case. A difference is ordained in the hoof below where it encircles the sensitive, delicate textures ; and this constitutes a new feature that must be ere long developed in the teaching of this branch of Veterinary science.

To give some idea of how this plastic filling up horn between the wall and sole acts, it may be compared to clay thrown between planks or masonry work to dam out water, or resist blows. Thus, in the foot of the horse, it tends to resist wear and ward off concussion.

Let us observe for a moment the wisdom of Nature, if we can penetrate into her contrivance in thus forming the horse's hoof. You have, at the same juncture, the wall, of a tough, fibrous structure, resisting wear like the fibres of a ground oak plant, as illustrated by the end of a walking-stick ; then you have the sole, with its layers of horn placed in an opposite direction, presenting a moderately flattened concave surface ; and between these you have a horny texture, differing in structure from both the afore-named parts—all combined, multiplying the power to resist wear infinitely beyond any single part, or any two united, without the third. The outer margin of the bottom surface of the hoof is so constituted in kind, quantity, and disposition of horn, as to form a natural protection greater than that of the hoof of any other animal we know of, corresponding to the greater combined capabilities for speed and power with which the horse is endowed.

The hoof, which I hold in my hand, has been macerated to exhibit the separation between the wall and the sole, which separation is complete between the anterior parts; but the sole still retains its position where it is firmly interwoven by its two posterior angles between the inflexions of the wall. (See Fig. 1.) It is however possible, as we have often shown, to separate the sole entirely by longer maceration ;

in which case, the thin extremities of the inflections are apt to break away. The plastic horn, which cements together the sole and wall,

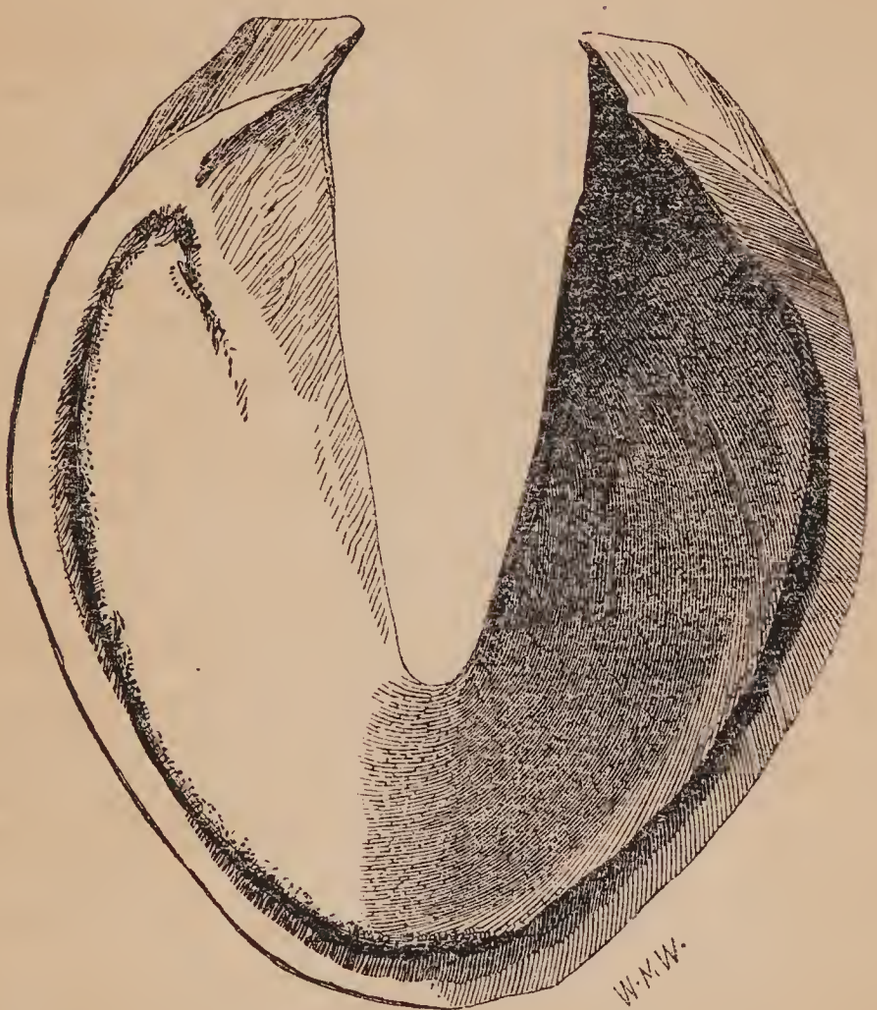

Fig. 1.

breaks down by maceration sooner than the two chief divisions of the hoof in connection, thereby setting free the wall and sole. Like the other parts of the hoof, the plastic union between the sole and wall is too often cruelly treated in the practice of shoeing, being sliced away, by that modern instrument the drawing-knife, so that a thin margin of the wall only is left to bear on, which in its turn is subjected to further destruction by the rasp, after the shoe is nailed to the foot. If, in driving the nails, injury be done to the foot (a much more common occurrence than is generally understood), a deep fossa is sunk by means of the small drawing-knife, along the line in which the nails are driven. This piece of idle inquisitive meddlesomeness, sometimes dignified with the title *exploration*, usually ends with the admission that nothing has been discovered to show the seat of injury. Unfortunately, something worse than nothing has in the meanwhile been perpetrated. The scooping-out process has added a second injury to the first, and, conjointly, destruction is carried to such extent as many weeks' and often months' conservative and proper treatment are requisite to repair.

The horny sole is admirably adapted to the purposes for which Nature has destined it. Presenting a concave surface to the ground,

and endowed with elastic properties, it is adapted to bend and yield, in harmony with the other component parts of the hoof, in various ways, and still to resume and maintain its natural configuration, and its shield-like formation for the protection of the organs contained within the enclosing wall, of which, as already remarked, it may be designated the floor.

Looking on Mr Bracy Clark's description of the sole as the most precise that has been given, as well as conveying his original views, I make no apology for again referring to his text (p. 91) :—

"Nature has secured herself most remarkably in two ways, from the effects which an arch of common properties would have been liable to, in becoming more condensed under pressure, and forcibly resisting the load brought upon it, which would have been subversive of the leading principles in the mechanism of the hoof—the sole therefore is cleft to its centre, or even beyond it, by a large triangular opening formed at its posterior part, which, destroying the resistance of the arch, serves to receive first the inflected ends of the wall of the hoof, and then is closed and filled up by the insertion of the inverted arch of the frog; so that these ends of the hoof are thus tied in, and secured from being forced asunder by the pressure from within, being thus wedged in between the frog and the sole, and are made to serve outwardly in their places the other offices we have already noticed, and the sole, by the above chasm in its centre, being thus effectually broken, has a diminished resistance in all its parts."

The layers of which the sole is composed, are constantly undergoing a change from the stage of secretion to that of desquamation. This process of production and exfoliation of successive layers, gradually, but uninterruptedly goes on, new material being thereby provided to compensate the constant consumption by wear. The outer and more superficial flaky substance of the sole, guards the inner or deeper layers from injury, prevents immoderate evaporation from, and consequent dryness of, the true sole, and counteracts the influence of excessive external moisture. After this explanation, you will be able to understand the reason why the natural state for the external surface of the sole should not be the polish, which, according to modern custom, is given to it, but the hardy roughened aspect which the naturalist, and the man of common sense, delights to see. It is wonderful how false notions have led to the slicing and polishing of this part of the horse's hoof, and how, by custom, owners of horses have suffered it to be done, whilst it would not be more unreasonable for them to send a carpenter into their grounds to plane the bark off their stately forest trees, with the notion that a polished surface would look better than that which nature had given them. Custom reconciles surprising things. The whole external surface of the sole has been submitted to most destructive treatment from the drawing-knife, during the last sixty years, according to the practice promulgated at the English Veterinary schools. On this head, I shall say more when we treat on shoeing.

THE FROG is the third and last division of the hoof which we have to describe; and here you have presented amongst others an admirable specimen of the sound frog of a colt's foot, which had never been shod, detached by maceration perfectly entire, thus exhibiting the organ as a distinct part of the foot—distinct in structure as well as function, as we shall presently demonstrate to you, whilst perfect harmony in the whole is manifest. (See Fig. 2.)

Fig. 2.

The frog is a triangle of elastic horn, filling up a space of corresponding figure in the sole. In the natural state, the frog extends nearly two-thirds through the centre and bottom surface of the foot. At its anterior parts, or apex, it consists of one ridge. After extending backwards about one-third of its length, the organ divides into two equal parts, each consisting of a prominent ridge, leaving an interspace termed "*the cleft of the frog.*" By this arrangement, provision is made for motion in the posterior parts of the hoof, in a slight degree analogous to the action of the cloven foot.

The frog is composed of a structure of horn unlike that of either of the afore-described parts. It is of a fine tough texture, more elastic and pliable than the sole; indeed, in the healthy state, highly elastic and compressible—besides it covers an exquisitely elastic body of its own shape, hereafter to be described. The fine horn, of which the frog is composed, is disposed in layers somewhat similar to that of the sole. In both, the growth from the secretive surface leads, through successive stages, to final separation—a change designated exfoliation, literally throwing off of leaves. This process, however, to go on in its normal state, requires that the foot should be exercised in uniformity with a natural law applying to all animals and to all organs.

I have only time briefly to show you how the horny frog, spreading out into a thin band, is extended to cover the bulbs of the heels, and

further passes round the upper margin of the wall, forming what Mr Bracy Clark calls the *coronary frog-band*—a delicately yielding closure to the hoof posteriorly and at its upper part—which we term the *coronet.* I shall notice the inner surface of this organ more particularly, as I shall that of the sole, when treating on the vascular secreting parts. One other character, however, remains to be noticed in the horny frog—an internal ridge formed by an inverted disposition of the horn corresponding externally to the cleft of the frog. Mr Clark has denominated that internal ridge, the *frog-stay.*

Candidly and gratefully recognising how much veterinary science owes to Mr B. Clark, I am bound, in justice, to call attention to the fact, that he laid claim to the discovery of organs and functions which his great predecessor, Mr Strickland Freeman, clearly understood, and faithfully described in his beautifully illustrated folio on the Foot——a work bearing indubitable evidence of high merit and unassuming candour. The necessity for these remarks will appear most conspicuously when we study the elastic properties of the foot; but it is not a little remarkable, that a simple, though beautiful, anatomical arrangement, described concisely, but yet faithfully, by Mr Freeman in 1796, should have been claimed as a discovery by Mr Clark in 1809. The only essential difference in the descriptions is, that the former, in few words, first notices the band of the coronet, and traces it to the bulbs turning forward like a dart to form the frog; whereas Clark traces the band from the frog. His description is certainly more detailed, but destitute of all claim to be regarded as the announcement of an anatomical discovery. Mr Strickland Freeman's words are (op. cit. p. 63) :—

"The coronet (which, as I have before explained, is the softest part of the hoof) returns from the heels inwards and forwards, like a dart; and extending itself over the skin of the fleshy sole, constitutes its last outward covering, and in this part takes the name of the frog."

And now to quote in part from Mr Bracy Clark (p. 63) :—

"Still pursuing our external view of this part as it is presented in the engraving, we are now about to describe a most singular provision of the hoof, which, though truly conspicuous, has strangely escaped an intelligible notice from all preceding writers on this subject.

"In regarding the base of the frog in this engraving, we see on each side of it the columns of the inflections of the hoof very much fore-shortened, and the frog is sending off laterally two stout processes of horn to firmly surround and envelope the sharp posterior edges of these inflections at their upper parts, and which form there two very dense rounded elastic bulbs of horn, in order to keep together and restrain any violent separation of these parts of the hoof, which would have been attended with disastrous consequences. Now we shall next observe that by means of these bulbs, a connection is formed in a most unexpected and singular manner, of the frog with the front of the hoof; for these wings, or lateral processes, continue their course round the whole line of the commencement of the hoof, forming a

convex band which is firmly adhering to the hoof, and sending off its upper edge or margin above the limits of the hoof, to be attached or deeply inserted into a fossa of the skin, and serving in its place a variety of very important offices."

The hoof is usually looked on, and spoken of, as an insensible unorganized substance—in fact, as dead matter. It is only when a wound is inflicted, and blood flows, that the foot is said to be wounded to the quick. Such a view is not only physiologically incorrect, but practically injurious. The hoof is not subject to the influences common to detached horn; it is, on the contrary, a living structure, and as such ought to be treated.

I shall give more fully my views on the separate functions of the component parts of the hoof, after we have further examined the organism it is understood to contain. It is only when considered collectively, that the separate functions of the foot can be adequately understood for practical purposes.

Extraction of a Calf—Breech Presentation—Removal of the Pelvis, &c. By W. A. Cartwright, M.R.C.V.S., Whitchurch, Salop.

About nine P.M., April 6, 1861, I was sent for to an aged cow that could not calve, the property of Mr Edward Dickin, of Yoking's Gate, near this town. She was seen early in the morning with symptoms as if for calving, but as there was no "water bag" to be seen, and only some little unhealthy and offensive discharges coming from her, she was not interfered with.

In the course of the afternoon it was discovered that the calf was coming backwards, but no "water bag" was seen at any time. Some slight attempts were made to remove the calf, but without avail, when it was thought prudent to send for me.

When I arrived I found that the cow was a very large one, of the cross breed, with a very large pendent belly, in perfect health, and in good condition. On introducing my hand, I could discover nothing but the breech of the calf and the tail presenting, with its hind legs lying low down underneath the abdomen. The calf was dead, and no doubt had been so for a fortnight or more, as the hair peeled off when trying to get the legs up, and nothing but very offensive and putrified discharges took place when the cow strained. The arms of the calf lay on the right side, more anteriorly on the side of the spine or the root of the coccyx. On attempting to push the calf forwards, it seemed to be a heavy lifeless mass, and with difficulty could only be removed to any extent. In consequence of the cow being so very large, and with such a pendent belly, and the calf being dead, I was not enabled to reach the feet, nor could I even get cords so low down as to pass them around the thighs. I then got a hook

into the side of one of the thighs, thinking to draw the leg more upwards, so as to enable me to reach the foot, but in this I succeeded no better, although all this time I had a person pushing the hind parts forwards with a crutch. Finding myself foiled at every attempt, I now, almost as a dernier resort, put in hooks about the hind parts, and tried to extract wholly by the breech; but here I also failed, as the passage was not sufficiently dilated, and the hooks gave way; and now, as the vulva and other parts were getting a good deal swollen, and I was nearly exhausted, I determined to leave her alone for a few hours, it being now after eleven o'clock.

Five next morning.—I found the cow as lively as ever, and the swelling of the vagina had subsided a good deal, but in every other respect she was precisely in the same state I had left her; and now, seeing I could not succeed in the ordinary way, and that I had no other alternative, I determined to remove the pelvic bones as best I could; and as I found several openings through the skin, from the hooks that had been inserted, and the bones exposed, I attached a cord to the posterior projection of the right ischium, and by gently pulling we soon removed this portion. We then attached a cord to the left ischium and removed it in a similar way. We then removed the pubic, iliac, and femoral bones on each side, and now the coccygeal bones and sacrum presented themselves, which were also removed by attaching cords to them, and removing them bone by bone. Having removed all the pelvic bones, we extracted the whole of the abdominal and thoracic viscera; afterwards we secured cords around the skin of the posterior parts, and by pulling at which we came in reach of the ribs, some of which were also removed. We also detached more of the spine; and by pulling at the skin, gradually dragged the remainder of the hind limbs into the passage, and cut off and extracted first one and then the other.

Cords were now more firmly secured around the skin of the loins and belly, and by pulling at which we got the remainder of the calf away—the fore legs being forward, and the head the last to come away. The head was dropsical, and of an enormous size, being, I should think, about 30 inches in circumference; but the great projection being from the frontal surface, and this portion or projection was 14 inches over it from one eye to the other, and it stood on the part of the head, the size of a child's head, and almost of a circular form.

I should think we must have been at least four hours, from first to last, in removing the calf, and yet the cow did perfectly well, and never suffered any apparent ill effects from the handling she received, as she fed and milked as well as the others. The cause of her doing so well, was from their being no violence done to the interior of the pelvis, by any large portion being wedged tight in or forced against the internal soft parts of the pelvis, when extracting the calf.

I do think, in some difficult cases of breech presentation, it will be far preferable to attempt the removal of the pelvic bones, as I did in this case, than use unnecessary force to injure the parts, in attempting to

get the legs up by repeated and prolonged efforts. There seems to me no particular difficulty about the matter, as one may cut the skin and muscles about the pelvis in every direction, and easily secure cords around the projections of the bones, and which may be pulled away with tolerably moderate force. Of course, there will be more difficulty in removing the bones, and separating the symphises of a large healthy calf, than one in a decomposed state.

I have often thought that a long narrow saw, with a small cutting portion only at the end, would be a very efficient instrument in all such cases as the present, or in many other parturition cases, when one wants to cut through bones that one cannot bend, or get into their proper places ; as for instance, to cut through the hind legs at the locks in breech presentations, when one cannot get them easily up, or to divide the spine in cases when the calf is doubled backwards, and the intestines and centre of the spine are presented ; indeed, I have frequently found the want of such an instrument, and intend to get one made. Perhaps Professor Gamgee may have a similar instrument in his collection, or they may be in use on the Continent ; but at any rate, I am not aware of any one being in use in England. We have often been much in want of many an instrument that I thought I could have invented had I had an ingenious mechanic on the spot at the time. I have recently had an instrument made, for the purpose of slitting up the skin from the fetlock to the top of the shoulder, by forcing it upwards when we are about removing a shoulder of the calf away.

Three Cases of Hydrops Pericardii. By J. M. Parker, M.R.C.V.S., Birmingham.

On June 5th, I was requested to make a *post mortem* examination of an aged bay gelding, that had died after four days illness, and from what I could glean, the following is the previous history which, with one exception, will apply to the whole three cases.

The horses were the property of a poor man who, having sustained heavy losses, with a view of cutting down expenses as close as possible, fed the team on middling hay, a good deal (in proportion) of cut straw, bran, and a little boiled barley. Three weeks ago, the hay was stopped, and young clover and rye-grass given, with the addition of a small portion of hay and straw. They worked on this food till June 1st, when they had grass only, and of that a barrow-load among the three. On the same night they had some mixed food, as before, but they refused to eat it—which state of things continued during Sunday, June 2d. The owner thought they were sulking for some more green meat only, so let them remain. On the 3d, he took them to work (ploughing), when one of them fell down in the field, and, after lying for a few minutes, was brought into the stable. The

others did part of a day's work. From this time, it is stated that they ate nothing, so they were drenched with gruel, and drank some hay-tea. The first horse that died showed no symptoms of pain till nearly dead. He had been purging a good deal, but was not treated in any way. My attention was now called to the other two; and, on arriving at the place, I found an aged grey mare, which had been bought for a very little money, having been turned out with a bad broken knee to get well or die, on a poor pasture, twelve months previously. Finding she was in *articulo mortis*, she was destroyed. I now saw a bay gelding, ten years old about. He looked the picture of starvation, and these are the symptoms presented on examination: The pulse was 56, and feeble, but regular; the visible mucous membranes pallid; breath fetid; extremities, and surface of body, cold; respiration undisturbed. He had had a dose of physic on the 3rd, as he was constipated. Purging soon commenced, and continued till I saw him, in all about thirty-six hours. He had eaten nothing. With a view of stopping the purging, I gave—acid. sulphuric, ʒj.; tinct. opii, ℥ss.; and sp. ammon. arom., ʒij.; in 30 oz. of water. Directing the legs and ears to be rubbed, and his general comfort to be attended to, I left him. Counter irritation was used to the sides, with the object of stirring up the skin a little, if possible, and the ammonia and some sp. æther. nit., to be repeated every three hours. At 6.30 A.M., June 6th, he began to knock about, and died at 8.15. The purging had ceased soon after giving the first draught.

Post-mortem appearances.—In first horse: The first thing that struck me was the entire absence of fat anywhere about the frame.—This remark applies to all three cases. The intestines were darkish-coloured, and appeared to me to be shrunken generally. There was a fair quantity of grass in the large intestines, and the stomach was distended. There were no signs of inflammation of any portion of the abdominal viscera. Hydatids were present on the liver of this horse, and the grey mare. On opening the chest, the pericardium was nearly full of fluid, and lymph was deposited around the origin of the aorta, and on both auricles. The right ventricle was half-filled by a yellow clot, as were also the anterior aorta, and the arteries of the fore extremity. A considerable quantity of gelatinous fluid was effused in the areolar tissue, especially between the shoulders and trunk, and between the muscles clothing the back and loins. The blood contained in the posterior vena cava was brownish, and the clot small in proportion to the fluid portion, and very easily broken up.

The grey mare's stomach contained about a quart of fluid—hay-tea apparently. Her intestines were nearly empty. The duodenum was distended in one part, and on opening it there was found a forge "clinker," $2\frac{3}{4}$ inches + $2\frac{1}{2}$ inches thick. The kidneys contained some lymph. In all other respects, she was the same as the first horse, with the exception that there were no clots in the arteries.

The last horse that died had slight inflammation of the mucous membrane of the colon, and in that intestine was found a quantity of sand—about three pounds. The stomach was very full of undigested grass, as were also the large intestines. The pericardium was full of fluid. There were small clots in the right side of the heart, and a deposit of lymph on the aorta and auricles. There was also a layer of gelatinous matter under the lining membrane of the trachea and larynx. The matter effused into the areolar tissue, was the same in extent in all the cases.

The question now arises, "What caused this effusion?" My opinion is—bad food, and very little of it. The horses were all old, two of them were very old. Digestion being impaired, the blood was impoverished; and at last, I imagine, that there was scarcely any power of assimilation left. The effusion into the pericardium, perhaps, arose from exposure to inclement weather, while the unfortunate horses were in a very low state from want of sufficient nourishment, and its origin was probably gradual. However, not being able to get a satisfactory description of the treatment of the team, before a day or two since, I am unable to trace the progress of the disease. As horses don't often die wholesale from such a malady, I am tempted to give the best account of the cases that I can.

Interesting Case of Malformation of the Intestines in a Calf. By James Brydon, M.R.C.V.S., Peebles.

Having been lately called to a farm near this town, to see a short-horn-calf, twenty-four hours old, which was said to have no opening for the passage of excrement, and never having known of a case of this kind, I could scarcely believe the reporter; however, on arriving at the farm, and examining the young patient, which I found straining very much as if to pass fæces, I could observe no opening, but the region of the anus was marked with a very small indentation. I immediately proceeded to operate; expecting, on cutting the common integument, that I might find the rectum, I made a very careful examination, and found no rectum. I then advised that the calf should be destroyed, and on making a *post-mortem* examination, there was no intestine passing through the pelvic cavity, but superiorly near to the spine, was the end of the large intestines exactly resembling the blind end of the cæcum; but having a strong membranous extension, easily traceable into the tail, which held the bowel in that direction. The intestine was completely plugged with fæcal matter of thick consistence. I also made a careful exploration of all the abdominal cavity, but there existed no external termination of the bowels in any other part, therefore I came to the conclusion that it was a malformation of the colon and rectum—the large intestine having terminated in a blind end similar to the cæcum,

and that the membranous attachment to the tail had been intended to form a rectum. I have written this as I think it may be interesting to young practitioners and to students.

Stricture of the Cervix Uteri, and Breech Presentation, in a Cow.
By the Same.

On the 12th of May last, I was asked to visit a cow, the property of a carpenter in this town, about six o'clock in the morning. The cow had been in labour for two days previously, and been attended by a student, who had given a dose of medicine, and been attempting to dilate the parts. The vagina was considerably congested from irritation with the hand. On examination *per vaginam*, the os uteri internum was so much constricted, as with great difficulty to admit one finger being forced into the uterus, and it felt rather of a cartilaginous nature. As I always wish to avoid serious operations, unless when perfectly necessary, and believing the disease to be inflammatory in its origin, and that it was better to trust to the treatment of hypertrophied cervix, I advised bleeding, and an application of belladonna to the parts. At ten o'clock on the evening of the same day, I was called to go again and see the cow, which, to all appearance, appeared in the same state. On examination, I did not discover any relaxation of parts, nor dilation of the os uteri. The owner being anxious to have her operated on, yet leaving the matter with myself, I proceeded to operate and cut the os uteri upwards and downwards, and in the lateral directions, to the extent of two or three inches each way. From the severe straining which had continued for three days, I considered it better to cut at once, and remove the calf. On introducing my hand into the uterus, I found the calf lying on its back, with the four limbs doubled back at the knees ; the head doubled over to the left side ; the neck twisted, with the crown of the head upwards, and the nose down in the lower parts of the belly. I considered the case a very hopeless one. However, with all care I pushed the calf well back, until I got the fore feet brought forward, then with much difficulty I got the head turned up into a straight position. The cow being young (in second calf), the passage *per vagina*, was rather limited, inasmuch as it required three assistants to remove the calf, which was quite dead. I also had recourse to the knife, to enlarge the opening in the womb. The hæmorrhage was trifling. I had all but commenced to amputate the fore limbs from the scapula. After delivery, the placenta removed, I sponged the cut parts carefully over with tinct. opii dil., and applied a breeching, from which I have found the very best results when put on to prevent inversion of the uterus. Mustard poultices were also applied over the region of the womb, and an opiate administered with a drink of chill water, and I advised that her food should consist of slops. I have only to add that the cow has progressed

favourably with the usual treatment. Twelve months ago, I had exactly a similar case, but the animal recovered without an operation. After straining, less or more, for three weeks, relaxation of the parts having taken place, the cow was delivered of a fine strong living calf. Therefore, I am of opinion we ought never to be too hasty in our operations, but allow all other well-considered means to be tried before using the knife. I also consider that bleeding and medicine are very useful to prepare the cow for so serious an operation.

Three Cases of Traumatic Tetanus. By J. HORSBURGH, M.R.C.V.S., Dalkeith.

I SEE, from the *Scottish Farmer*, that the cases of traumatic tetanus, communicated by me to the *Edinburgh Veterinary Review*, have been read at a meeting of the Royal Agricultural Society of England, about three weeks ago. We do not often meet with such cases in practice, but I have had three since sending my former communication on Tetanus to the *Review*. In the first case, I was requested by John Gibson, Esq. of Woolmet, to go and see a horse at his farm of Dean, about a mile west from Edinburgh. I found my patient, a fine work horse, very bad. He had been ill a week; and I was told that he had been treated by Professor Dick, and that extract of hyoscyamus had been put into his mouth, which was quite fixed. I could not ascertain whether he had had physic or not. The bowels were constipated, and he was going at large in an open straw barn. The previous treatment of the case having been bad, the case seemed to be hopeless. I did not, therefore, think it expedient to open the œsophagus to give physic, but had him removed to a small house, where he was wrapped in blankets and bathed. He died in three hours.

Mr John Deans, baker here, had a young van horse, which one night got loose in the stable, and received a kick on the inside of the thigh, which seemed to have fractured the bone longitudinally, as several spicula of bone came out of the wound. He was tied up, and the bone enlarged considerably at the place, but healed well. Three weeks after he received this injury, I found that he was affected with tetanus. I had not seen him for a few days, and he was very bad, but I had him treated in the manner directed in my former paper. He got perfectly well.

About a month ago, Mr Turnbull, contractor here, had a horse thrown over in a heavily loaded cart, by which one of his knees was cut, the olecranon nearly displaced, and he was otherwise much hurt. He stood three weeks, and was nearly well, when suddenly he was seized with tetanus. I had him wrapped up in rugs, and bled. The jaws, when first noticed, opened about an inch, and a strong dose of

physic was put over his throat, by means of a small cane. Though he is not in a good place for treatment, he is now nearly well.

These cases confirm me in the opinion, that traumatic tetanus is not the dreadful disease that persons have hitherto supposed. We can now treat blackleg, pleuro-pneumonia, and such diseases, which in many instances destroyed whole stocks, and often we can arrest them by preventive means.

On Tetanus. By JOHN GEORGE DICKINSON, M.R.C.V.S., Boston, Lincolnshire.

I HAVE heard such a thing as a tetanic horse being condemned to death, and having been placed on the edge of a newly-digged grave, receive from a bad shot, or bad anatomist, a fair proportion of lead in the frontal sinuses, with the effect of producing a ghastly wound, but cure of the tetanus. The violent-shock system, which has been circulating in the newspapers, and which indicates the success occasionally attending the discharge of a gun close to the ear of a tetanic horse, proves, however, more often deadly than it does a restorative; and it is the great wish of all who meet with such cases in practice, to know what are the true principles to guide us in treatment.

Veterinary surgeons are almost at one in the belief that any means which will safely cause the bowels to respond, will further very materially a return to health, even in tetanus. Purgatives are administered, therefore, but should not be pushed beyond a reasonable point, so as not to poison the system with material which is not readily evacuated by the alimentary canal. I find the greatest benefit is derived, in the vast majority of diseases which I have to treat, from the free use of the enema funnel, which Mr Gamgee, sen., has so strongly advocated amongst us. Were it to cost £3 instead of 3 shillings, and was complicated and pretty, many more would have eagerly taken it up than have done so already; but it so far surpasses all other means of giving enemata to horses, and its effects are so speedy and general, that it must gain ground with all judicious practitioners who aim at adopting any plan best calculated to save life, and to save expense also.

CASE I.—*Tetanus arising from Abortion.*—A blood bay mare, the property of Mr W. Kirkby, Frieston, went out to work in a light cart as usual, and in good health; returned home, and after eating all that was given her, she was then taken in great pain, having every symptom of colic, which resulted in bringing on premature parturition. After the fœtus was expelled, she was still in great pain, when I was sent for—great prostration, copious perspiration, extreme cold, pulse quick, membranes pallid, no passage of feculent matter or urine. My great object was to allay the great prostration and fever, with check to all the natural secretions. Having given sufficient.

purgative medicine, I gave stimulants, viz., brandy and eth. sulph., with aconite. The next day, 6 A.M., the improvement was marked, as indicated by the equality of the circulation, also a great quantity of hardened fæces, and the animal urinated freely,—but to my surprise, had every symptom of tetanus. I administered belladonna ext., ℥j., hyd. chlor., ℈j. every hour, until salivation had been induced. The symptoms gradually abated, and the animal recovered.

Case II.—A blood horse, the property of W. Mears of this town, after having a ball given to him by the groom, would not eat or drink, and presented these symptoms: trying to vomit—great rigidity of the whole muscular frame. The man confessed to having given the ball upon a stick, but he was sure no portion was left in the mouth. I examined the mouth, and felt a sharp substance on the dorsal part of the tongue; but the horse being a dangerous unmanageable animal, I had to throw him, and after some difficulty, extracted a sharp piece of stick, three inches in length. Great excitement remained, and not being able to administer medicine in the proper manner, I gave oleum cortoni and flem. tinct. aconite in the water he drank.

There was great pain of the muscles of the throat and neck—these parts were sponged with solution of belladonna. After following up this treatment for three days, the horse recovered.

Two months after this attack, this horse met with an accident coming through a gate, a nail causing a wound of the outer muscles of the thigh. I used the metallic wire, followed up with arnica and water dressings, soon having healthy discharge; but to my surprise, I found him on the morning that I intended to remove the stitches, to have every symptom of tetanus, with great excitement. I removed the stitches at once, applied belladonna and arnica lotion, administered the same medicine as before with great care, kept the animal quiet, and recovery was the result.

REPRINT OF REMARKABLE MEMOIRS.

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An Essay on the Diseases of the Eye of the Horse, and on their Treatment. By JAMES WARDROP, Surgeon Extraordinary to the Prince Regent. 1819.

(From the First Volume, New Series, of the Communications to the Board of Agriculture, being the Essay to which a Premium was adjudged by the Board.)

GENERAL OBSERVATIONS.

WHEN medicine was in its infancy, the dissection of animals greatly contributed to its advancement; but since the diseases of the human frame have been very successfully investigated, and medicine assumed a rank among the sciences, that knowledge may be advantageously employed to illustrate the diseases of animals. In the same manner, therefore, as the natural philosopher has contributed to the improvement of the arts, and the different branches of agriculture, so it is reasonable to expect, that if the attention of medical men be directed to the economy and diseases of animals, this useful branch of knowledge will be established on the solid basis of scientific principles, and have such rules laid down as shall serve to guide those on whom the practical part may be devolved.

A taste for pursuits of this kind among medical men might lead to still more important results, as any addition to our knowledge of the diseases of animals must serve to illustrate the diseases of the human body; and the frequent opportunities of dissection and experiment in animals, and the facility in conducting such enquiries, would, if zealously pursued, materially promote such an object. From these researches, the agriculturist might also derive some useful hints to guide him in improving the breeds of domestic animals; a subject which the pursuits of scientific men are likely materially to contribute.[1]

The diseases of all the organs of the lower animals are not only less numerous, but they are more uniform in their progress and symptoms than those of the human body. The Eye of the Horse is subject to much fewer diseases than that of man, whilst at the same time these diseases do not assume that almost infinite variety of character which is met with in the human eye, and which is in man produced from the habits of society, and the various modes of life to which he is exposed.

The uniformity in the appearances of diseases in the Eye of the Horse makes the treatment of them the more simple—less of that nice discrimination being required in treating individual cases, which is so essentially requisite in the practice of physic.

Before considering the different diseases to which the Eye of the Horse is subject, it ought to be observed, that not only the progress

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[1] See Mr Clyne's excellent Paper, "On the Form of Animals," in the Communications to the Board of Agriculture, vol. iv. p. 440.

of the diseases but their treatment must vary, according to the different circumstances under which the animal is placed; or, as it is in common language called, the "condition of the horse." It may, therefore, be proper to observe that there are four different states of condition, in either of which the horse is usually found.

The *first* is when he is at grass, or living on green food, exposed to all the vicissitudes of weather.

The *second*, when his food is more nutritious, and in that state of condition he is usually kept in by the agriculturalist.

The *third*, when he is living on dry food, and kept in a warm stable, as most horses are for the purposes of riding and harness.

The *fourth*, in the highest possible state of condition when the food is in the least bulk, the body warmly clothed, the horse confined in a hot stable, and exposed to the most violent bodily exertions, for the purposes of the field or turf.

In these different states of condition, it is reasonable to suppose, that though the same kind of treatment be always applicable to the same disease, yet that treatment must be pursued in a very different degree in animals whose condition is not similar. Thus, if the eye of a race-horse receives a blow, the quantity of blood necessary to be taken away, in order to prevent or allay the subsequent inflammation, ought to be much greater than what would be advisable to take from a horse at grass, who had received a wound of equal severity.

The value of horses in this country, both for the useful purposes which they serve, and the gratification of amusement, having made the breeding of that noble animal a source of considerable profit to the agriculturalist, it therefore becomes of great importance, not only to improve his strength and beauty, but the treatment and management of all the diseases to which he is subject, and by which his utility or appearances might be injured. Next to the vital organs, a healthy state of the Eyes of the Horse is perhaps of the greatest importance, as for most purposes in which he is employed much depends on the safety of his movements, and in these the eyes have an important share. In man, a great deal of the character of the countenance arises from the brilliancy and expression of the eyes; so also in the horse, the form, colour, and position of the eyes, have the principal share in giving expression to the head.

From the position of the eyes in the head of man, an imperfection in one of these organs produces little or no defect in vision, the two eyes being always employed to look at the same object. But in the horse, the eyes are so placed that he at the same time observes different objects with each eye; when, therefore, one eye is imperfect, the horse is apt to shy and start, whereas, when one eye is completely destroyed, he generally seems to suffer little inconvenience. Many very safe and valuable hunters have only one eye.

In man, there is frequently an original or congenital difference in the two eyes. This, however, is not easily ascertained in the horse, though it appears very probable, from the difference to be almost

universally observed in the two sides of the face, a difference which has even been closely imitated by ancient sculptors.

It is a common observation, that when one eye is attacked with any disease, the other is very apt to become affected with the same complaint. This sympathy observed between the two eyes has been noticed in all those organs of animals of which there are a pair; and, as shall afterwards be observed, a knowledge of this fact leads to important practical conclusions.

Another question worthy of attention in considering the diseases of the Eye of the Horse is, to ascertain how far any of these affections are *hereditary*. There is no doubt but that every race of animals inherits the bad as well as the good qualities of the parents; and that in breeding, imperfection and deformity may be as successfully propagated as perfections and beauty. This has been established beyond all controversy; and it is well known that, in mankind, families are not only subject to particular diseases, but in every race one or more organs of the body are less perfect in structure and functions, and more liable to disease. Numerous facts may be brought forward to establish the truth of this observation; but it is sufficient for the present purpose to remark how often it happens that in one family many of its branches are affected either with diseases of the lungs, or brain, or liver, or stomach. Some diseases of the human eye are also known to be hereditary; it is therefore to be expected that the eye of the horse shall be defective, and more liable to diseases in particular races, or as it is usually denominated, in certain "Lines of Blood." Breeders of horses are familiar with this observation, and its coincidence with similar facts in other organs makes it worthy of attention.[1] In corroboration of this opinion, it may be here mentioned that a mare of the Mercury Blood, belonging to the Royal stud at Hampton Court, who had lost one eye, had last season a dead foal which had a single eye, scarcely any vestige of the other being perceptible. Several of the produce of Treasurer, a son of this mare, have been foaled with defective eyes.

As has been already observed, the diseases of the horse's eye are not numerous; and it is here proposed chiefly to consider those causes of blindness which are most frequent, and on which medical treatment has the most powerful influence. But before describing the diseases it may be proper to make some general remarks on the anatomical structure of the eye of the horse in its healthy state, which may perhaps render the subsequent observations more clearly understood.

SECT. I.—OF THE STRUCTURE OF THE EYE OF THE HORSE.

The Eye of the Horse, in its structure, resembles very much that organ in the human body.

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[1] It is well known that some particular lines of blood are subject to spavins, others to curbs, and others to diseases and imperfections in the form of the feet.

Its form is nearly spherical, and would be so exactly, were not the fore part a little more convex than the posterior.

The humours of the eye are contained in a firm coat, called the sclerotic, the more convex and anterior part of which is transparent, and from its consistency and horny appearance, it is called the Cornea.

Within the sclerotica is a second coat, called the choroides.. This is much thinner than the sclerotic coat, and is composed of numerous blood-vessels, which are often the seat of disease, and its interior surface is covered with a black pigment, which serves an important purpose in vision. At the back part of the globe the optic nerve enters, and it expands within the eye-ball, spreading itself over the whole surface of the choroides like a delicate web, and is called the Retina.

At the junction of the choroides and cornea arises the Iris, a flat opaque membrane, which transversely divides the eye into the anterior and posterior chambers, and in the middle of which is a perforation called the Pupil. In man the pupil is circular, but in the horse and all graminivorous animals it is of an oblong form, placed horizontally to extend the sphere of sight on the surface of the earth; and this opening is capable of contracting and dilating, according to the degree of light to which the eye is exposed. From the upper part of its edge there hangs a fringe or curtain, which is peculiar to the horse, and probably intended for the more complete closing of this aperture.

The cavity of the eye-ball is filled with three different humours.

The first, from its fluidity, is called the Aqueous Humour, and fills the space between the cornea and iris.

A little behind the pupil is situated the lens or Crystalline Humour, which, when it becomes opaque, forms what is called a cataract. It is nearly of the consistence of firm jelly, decreasing in density from the centre to the circumference, and having the form of a double convex lens.

The cavity between the crystalline humour and the back part of the eye is filled with a transparent fluid, rather more viscid than the aqueous humour, and called the Vitrious Humour.

The three humours serve for the purpose of refracting the rays of light within the eye, and painting on the retina pictures of external objects.

The eye-lids, with the tears, serve to protect and preserve the transparency of the cornea. These are lined by a very delicate membrane, similar to that which covers the interior surface of the nose and mouth; and this thin skin, called the Conjunctiva, not only covers the internal surface of the eye-lids, but is reflected over the whole anterior portion of the globe of the eye.

SECT. II.—OF THE SIMPLE INFLAMMATION OF THE EYE OF THE HORSE.

Inflammation, as it is the most common, so it is the most im-

portant disease in the eye of the horse. It precedes or accompanies almost all the diseases to which that organ is subject, and it is the constant effect of injuries. The treatment of inflammation in the horse's eye must, therefore, be well understood.

Simple inflammation of the eye is marked by striking symptoms. Though the inflammation be not violent, the animal keeps the eye-lids closed; the eye-lashes adhere together, from the secretion of mucus, which has become inspissated; the eye-lids are more or less swollen, their veins are distended with blood; and there is an unnatural flow of tears, which is more or less copious. When the eye-lids are opened, their internal surface appears redder than natural; the *haws* are inflamed and swollen; the white of the eye is covered with red vessels, and the cornea, or horny coat, loses its pellucidity and lustre, and becomes dim; a general muddiness either affecting the whole of that tunic, or confined to one part, forming the commencement of a speck or film.

When the progress of inflammation of the eye is not arrested by proper remedies, the cornea becomes more and more dim; matter is formed below it in the cavity of the aqueous humour, and finally the cornea ulcerates; the matter with the aqueous humour then escapes, and thus both the appearances and utility of the eye are destroyed.

Inflammation of the eye is usually accompanied by more or less general fever, marked by heat in the mouth, and thirst, loss of appetite, frequency of the pulse, unhealthy appearance of the coat, coldness of the ears and legs, with alternate heats and chills.

Inflammation of the eye frequently succeeds injuries. It arises from colds also, and fevers, sudden chills after violent exercise; and like inflammation of all other organs, it most commonly attacks young horses, and those in high condition.

Treatment.—Much depends on the first means which are adopted in the treatment of inflammation; for if the disease does not receive a sudden check, the same decided measures cannot be adopted in all the future stages of the disease, the cure then becomes protracted, and effects of the disease remain, which blemish, if they do not injure the organ.

The chief means to be employed to relieve inflammation in the horse's eye, are bleeding, purging, blistering, and attention to food and air.

A copious evacuation of blood is the first thing to be done, and I would advise that the blood be taken from the neck, in preference to any vein in the immediate vicinity of the inflamed organ. The common opinion is, that the nearer the inflamed part from which the blood is taken, so much more effectual is the remedy. It will, however, be found, that although the inflammation appear immediately to subside by local bleeding, yet whenever the system is at all disturbed, blood taken from a large vein, or general blood-letting, is much more powerful in relieving the constitutional derangement, whilst it has an equal power in allaying the local inflammation. It will also be found, that

if blood be taken from vessels in the immediate vicinity of the inflamed part, the irritation caused by the operation is generally considerable, and though the redness is relieved at the time, it very soon returns by the supply from the collateral vessels, which does not take place after general blood-letting. The orifice made in the vein should be large, and as much depends on the immediate effects of the first bleeding in all cases of inflammation, from three to five quarts may be taken, according to the violence of the symptoms. A second bleeding may be had recourse to, in from twelve to twenty-four hours, should the symptoms increase, or remain undiminished.

At the same time the horse should be given a purgative-ball, or what is perhaps the safer and most efficacious practice, a common purgative-ball may be divided into three doses, and one portion given every four or six hours. This merely acts gently on the intestines, whilst by making the animal sick, it diminishes the force of the circulation; and it is not attended by the debilitating effects which often follow strong purging. Horses, indeed, whilst they can bear bleeding to a great extent, sink rapidly by purging.

Nothing is to be done to irritate the inflamed eye; but it is to be frequently fomented with a decoction of poppy-heads, or chamomile flowers. A second, or even a third bleeding may be necessary, to remove the inflammation; but these will be in a less quantity than the first, and are not to be had recourse to till a reasonable time has elapsed after the exhibition of the other remedies, so that their effects may be observed. After the acute symptoms have subsided, the eye generally continues more or less weak, and irritable, and the white of the eye remains red, though the vessels are of a duller hue. In this state, blistering the cheek and temple may be of service, but the blister should be cautiously and carefully used, to prevent any blemish. The vinous tincture of opium is also an excellent application, and may be applied by taking a camel's-hair pencil dipped in it, and then touching the ball of the eye once or twice a-day. Saturnine and vitriolic lotions are recommended, and they may sometimes be advantageously employed, singly, or combined with opium. In some cases too, of old inflammation, where such remedies have failed, a seton put in the cheek has been useful; and in cases of this kind, a course of alterative medicines may also be given.

It is of great consequence, in the treatment of all diseases of the Eye of the Horse, to pay attention to the air of the stable; for as this is often impure, it is proper to keep him in a well-aired place, and his head placed so that he shall not be annoyed with light, or obliged to stoop for food.

With respect to food, the horse should have no corn until the inflammatory symptoms subside, but live on green meat or mashes.

The practice of scarifying the eyes, is one which is seldom or never necessary to resort to, and when not performed with great dexterity, the irritation created by the operation does more harm, than the blood taken away does good. The cruel practice of cutting out the

haws, from considering it as a diseased growth, is much to be condemned, as not only useless but hurtful.

When matter is formed in the eye, it may be of great use to discharge it along with the aqueous humour, and thus prevent the ball from bursting. This is an operation that requires a good deal of nicety, and is to be done by penetrating the anterior chamber of the eye with a sharp-pointed knife, something like a common lancet, the eye-balls and lids being previously cautiously and well secured.

SECT. III.—OF THE PURIFORM INFLAMMATION OF THE EYE OF THE HORSE.

This inflammation of the eye of the horse, differs from that which has been described, in the part of the eye which is affected, as well as in some of the symptoms of the disease. In the puriform inflammation, the disease is confined to the membrane which lines the eye-lids and covers the eye-ball, called the conjunctiva, or mucous membrane ; and its chief character is the profuse discharge of a puriform fluid. Besides the discharge of mucus, which is more or less mixed with tears, the eye-lids are very much swollen, and their edges glued together ; their internal membrane is also swelled, formed into folds with matter deposited among them. The cornea appears depressed, from the swelling of the conjunctive membrane on the white of the eye, sometimes forming large bladders, which the ignorant have considered as new growths, and conceived proper to remove. The puriform inflammation of the eye is generally the effect of cold, resembling the common catarrh, and it often spreads among all the horses of a stable ; for like the same disease in the human body, if the matter touches a sound eye, it produces the disease.

The treatment of this species of inflammation is to be conducted on the same general plan as in that already detailed. The depletive system of bleeding and purging is to be had recourse to, and pursued according to the violence and obstinacy of the attack. The eye or eyes, for it usually attacks both, should be fomented with anodyne and emollient decoctions, the animal kept in a well-aired stable, and fed moderately. When the more severe inflammatory symptoms are subdued, the extract of lead, undiluted, may be applied once or twice a-day to the eye, with a camel's-hair pencil, in the same manner as directed with regard to the vinous tincture of opium ; or a small portion of the red precipitate ointment may be put between the eye-lids with a camel's-hair pencil, or probe, every second day.

SECT. IV.—OF THE SPECIFIC INFLAMMATION OF THE EYE OF THE HORSE.

The disease now to be described is perhaps the most common, and certainly is by far the most dangerous disease of the eye of the horse. It has seldom been distinguished from the simple and puriform inflammations of this organ, though its more serious consequences are well known.

This inflammation is seated in the internal parts of the eye-ball, affecting more particularly the choroid coat and the iris.

There usually comes on very suddenly, perhaps in a single night, a great tenderness in one eye, commonly marked by the eye-lids being shut, a copious secretion of tears, the white of the eye appearing slightly red, and the whole anterior chamber of the eye dim and clouded; there being no distinct speck on the cornea, as takes place in the common inflammation of the eye. The redness of the eye-ball is never very remarkable, even though the disease assumes its most aggravated form; but the dimness of the anterior chamber increases rapidly, and in two or three days, or even a shorter period, a yellow spot appears at the bottom of that cavity, arising from the formation of pus. Sometimes the quantity of pus is very considerable, and I have seen it fill at least two-thirds of the anterior chamber.

After lasting one, two, or three weeks, the inflammation and watering usually begin gradually to subside. The pus, though in a very large quantity, is sometimes almost entirely absorbed, so that scarcely any vestige is to be seen; and in other instances, thin webs of opaque matter remain, which destroy the transparency and lustre of the eye, and which, by their adhesion to the edges of the pupil, interfere with its motions, and destroy its form.

It is astonishing how acute dealers in horses are in discovering an eye which has had an attack of this kind.

Sooner or later, whilst the horse appears in a state of perfect health, the eye is again attacked, the disease being accompanied by the same symptoms, making a similar progress, and having the same termination; whilst each new attack is accompanied with the deposition of more and more opaque matter. These attacks succeed each other at very different, and sometimes at very distant intervals, until the whole pupil is filled with an opaque white matter, and the sight of the eye completely destroyed.

During this progress, the disease is often confined to one eye, at least one eye is usually much more severely affected than the other. In some cases the two eyes are simultaneously affected, and finally, by a succession of attacks, the horse becomes completely blind.

If an eye, which has in this manner suffered, be dissected, it will be found that the external changes have been accompanied with still more serious internal derangements. The crystalline lens, which lays behind the opaque matter effused in the pupil, has lost its natural transparency, forming in the human eye what is called a Cataract, or in the horse, *"Moon blindness."* The capsule of the lens has also become quite white and opaque, and there is usually found, collected between the choroid coat and the retina, a quantity of coloured fluid, sometimes of a straw yellow, and sometimes bloody, which, by its accumulation and pressure, causes an absorption of the vitrious humour, and at the same time, compressing the whole retina into a chord or bundle.

It has already been noticed, that horses are very subject to this

disease. It attacks them of all ages, of all classes, and in all states of condition; though, as far as I have been able to observe, it is most common in those that are high-bred, and in high condition. It is therefore probable, that dark, hot, and ill-ventilated stables, must have great influence in the production of this disease.

It is supposed to be most frequent in particular lines of blood; and those who breed horses for the turf, are averse to breed from mares or stallions who have weak or blind eyes.

From the foregoing remarks,[1] this opinion appears to be founded on accurate observation, and it deserves attention in the selection of stock.

This disease has usually been found incurable; and when a horse's eye has once been affected with it, the proprietor is generally anxious to sell the horse, aware of the disease returning sooner or later, and finally terminating in blindness.

Bleeding, moderate purging, a cooling diet, and a well-aired stable, afford a temporary relief, and, by moderating the severity of the symptoms, diminish the permanent dimness of the anterior chamber. Considerable benefit is derived, in some cases, from the application of the vinous tincture of opium two or three times a-day, in the manner formerly directed. A seton in the temple, or cheek, has also been advised by some; but as far as I have been able to observe, however beneficial these remedies may be in diminishing the severity of the symptoms, yet they never prevent the repetition of attacks, and the ultimate destruction of the organ.

I have already noticed, that there is a remarkable sympathy between the two eyes, and when a disease attacks one, the other is very apt to become more or less affected.[2] This fact is strikingly illustrated in the diseases of the human eye; and having many years ago remarked, that the disease which has now been described in the horse, generally first affects one eye, and then the other, it occurred to me, that if the eye first affected were to be altogether destroyed, the progress of the disease in the other would be arrested, and one eye thus preserved. An opportunity of making the experiment soon occurred. A valuable race-horse had one eye considerably injured, from repeated attacks of this disease, and the other eye, during one of these, appeared tender. I made an incision through the cornea of the bad eye, with a sharp-pointed bistoury, through which the aqueous humour escaped. The lens was then squeezed out, and along with it the whole vitrious humour, which seemed in a healthy state. A poultice was applied over the eye-lids; the eye suppurated, and ultimately completely sunk. The other eye resumed its natural lustre and transparency, and I heard of this horse upwards of six years afterwards, when he was a very valuable hunter—the eye having remained perfectly well.

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[1] See General Observations, Sect. I.

[2] When a tooth of the horse decays, the corresponding tooth on the opposite side soon after becomes diseased. It is the same in man.

Since making this experiment, I have found that there was nothing new in the observations I had made; for many conversant with horses are aware that, if one eye be so severely affected that it is quite destroyed, they consider that there is a great chance of the other remaining sound. I have even heard some farriers remark, that if the bad eye happens to meet with an accident, and the injury hasten its destruction, the other will be saved; and further, that aware of this, some have even ventured to adopt the practice of destroying the diseased eye, which they have rudely done by putting quick-lime between the eye-lids, or by thrusting a nail into the eye-ball, so as to excite violent inflammation, suppuration, and destruction of the organ.

When, therefore, a horse is affected with this terrible disease, it is of much importance to have the means of saving one eye, as for every useful purpose one eye is found to be as valuable as both. Few will adopt this practice before the disease has made considerable progress in one eye, or until the second eye appears to be affected. In this latter case no time ought to be lost. The operation is in itself simple. A curved sharp-pointed bistoury is to be introduced into the anterior chamber, close to the circumference of the cornea, and its point is to be passed into the pupil, so as to puncture the capsule of the lens. It is then to be carried to the opposite side of the cornea, so that in withdrawing it there is a large incision made in the cornea.

The aqueous humour immediately escapes, and by afterwards squeezing the eye-ball the lens can be easily removed, and along with it the vitrious humour; or, if that be absorbed, by the coloured fluid collected between the choroid coat and retina. In this collapsed state of the eye-ball the wound suppurates, and little inflammation supervenes.

When the horse is deprived of one eye, he may for some time have the vision with the other confused, but this is rectified by a little experience. In some instances it may happen that the eye which is saved has been originally an imperfect one, so that the horse never acquires perfect sight.[1]

SECT. V.—INJURIES OF THE EYE OF THE HORSE, AND OF EXTRANEOUS SUBSTANCES GETTING BETWEEN THE EYE-LIDS.

When the eye receives an injury, the first thing to be guarded against is the subsequent inflammation; this being more or less according to the severity of the injury.

If none of the coats of the eye or eye-lids have been divided, it will be sufficient to foment the eye with a decoction of chamomile flowers, to take some blood from the vein in the neck, and to give a purgative-ball.

It sometimes happens that the cornea is divided by a sharp instrument, and it also sometimes gives way from the concussion of a blow

[1] To avoid deformity, glass eyes have been used for horses.

on the eye-ball. This injury is often followed by a good deal of inflammation, very copious and repeated bleeding being necessary to abate it.

When the inflammation subsequent to an injury has subsided, more or less irritability and weakness of the eye often remain; and for the removal of this, nothing is more effectual than the application of the vinous tincture of opium in the way before mentioned, fomentations being at this time desisted from.

When particles of dust, or any extraneous substance gets into the eye, it often creates a good deal of uneasiness. As these adhere but slightly to the membrane lining the eye-lids, they may generally be removed with a camel's-hair pencil or the point of a probe; or some milk and water may be thrown forcibly with a syringe between the eye-lids.

I have seen a husk of corn stick very firmly to the cornea, and produce a great deal of irritation; but whenever any extraneous substance is removed, the inflammation and irritation caused by it rapidly subside, and there is seldom anything necessary to be done for its removal, except bathing the eye with hot water.

SECT. VI.—OF FILMS, OR SPECKS ON THE EYE.

Films or specks of the cornea are always the consequence of some previous inflammation, whether that has been the effect of an injury or any other cause.

In ordinary cases, the obscurity of the cornea diminishes along with the accompanying inflammation; but in others, a distinct speck remains after all inflammation has subsided.

A variety of stimulating and highly irritating substances are employed for the removal of such films, and many of them may be of equal utility. I have, however, generally remarked that they are used too frequently, and it will be found that such applications act more powerfully when used seldom.

A small piece of the red precipitate ointment, applied every third, or even every sixth day, is an excellent remedy; and this may alternately be used with great effect, with a powder composed of one part of burnt alum to four of sugar; or pure calomel may be used in a similar manner; but as the stimulating effect of these soon ceases, they ought to be employed at least once a day.

SECT VII.—CONCLUDING OBSERVATIONS.

Besides the diseases of the eye, which have been described, there are some others, which either from their rare occurrence, or less serious consequences, may be but briefly noticed.

From what has been remarked in a former section,[1] it will be perceived that the Cataract in the Horse, or what is commonly denominated, '*Moon blindness*,' is not, as in the human body, a distinct

[1] See Sect. IV.

disease, but is always accompanied with other diseased changes. Besides, even was the horse subject to a simple opacity of the lens, the removal of that part of the organ would be followed by no advantages; as without a magnifying glass, his vision would be imperfect.

It may also be here noticed, that there is a disease which frequently affects the eyes of horses in India, but which, as far as I know, has never been observed in Europe. A *worm*, which from the description I have received from different people, may be compared to the common *ascaris*, is generated in the anterior chamber, and can at times be distinguished swimming about with apparently great vigour, in the aqueous humour. It produces a good deal of irritation and inflammation, the effects of which ultimately destroy the organ. The natives of India cure the disease by making an incision through the cornea, and extracting the worm. Though I have never had an opportunity of examining an eye affected with this curious disease, the circumstantial accounts from several accurate observers, leave no doubt in my mind of its existence; and the fact accords with what is known to take place regarding the formation of worms, not only in the human body, but more particularly in the liver, lungs, brain, and other organs of the inferior animals.

Warts and little *tumours* are sometimes formed on the eye-lids, and are often the source of irritation as well as of deformity. These may be best removed by snipping them off with scissors, and destroying the remaining portion with caustic.

Small polypous excrescences also, sometimes arise from the iris; but these can seldom require any treatment.

The eye of the horse is also subject, like all the other organs of animals, to deformities from birth. I have already mentioned the instance of a mare with one eye, that had a foal with the same defect. In another instance, a large tuft of *hair* was found growing from each cornea. Sometimes this is of a curious colour, producing the wall-eye. But these defects cannot be remedied, and though the organ may not be injured by them, they must depreciate, to most people, the value of the horse.[1]

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[1] The medicines referred to, are such as are usually kept in the shops, made up to the London Pharmacopœia.

REVIEWS.

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The Form of the Horse, as it lies open to the inspection of the Ordinary Observer. By T. C. L. Carson, M.D. Dublin: W. Robertson. 1859.

The little work of 139 pages before us must not be judged by the standard too commonly adopted, viz., bulk. After its perusal, we unhesitatingly pronounce it to be a publication of great merit.

The first six pages are devoted to general remarks on horses, which will interest and instruct many readers.

On the subject of breeding Dr Carson says:—

"Blood-horses are completely broken down with the severity of their early training and racing; or else, if they continue to run on, and well, for three or four years, they command such enormous prices, that few localities would remunerate the purchaser of a first-class stallion, unless the breeders could be induced to change their present opinions and practice. This, perhaps, is the point at which reform should commence; and I am inclined to think that those parties who keep brood-mares would willingly incur a much greater expense than they do at present, if they were properly alive to, and aware of, the importance of the matter. In general, they have such ill-digested notions on the subject, that they are better satisfied to pay a small sum for the services of a wretched, weedy, useless animal, than to give a remunerating return to the purchaser of a first-rate, sound, and high-priced horse; in fact, they know so little about the points of a horse, that they generally choose the one whose deformities are hid by a mountain of beef. 'Such men,' says the sensible author of 'The Pocket and the Stud,' 'breed from any mare that will breed, get a common country forty-shilling sire, or, if their aspiring thought carrics them so high, some thorough-bred one, whose shape, make, blood, and performance, bring him to about the same price; they thus get a living beast, probably inheriting all the combined imperfections of both parents, put him to plough at two, ride him at three, and at four, provided he will carry you on his back (for mouth or action is, of course, not attended to), he is sold as a 'loickly thing.''

"The system of crossing which has been adopted since the introduction of thorough-bred stallions into country districts, appears to me to be a further cause of the degeneration of our general stock. Let his shape and qualities be good, bad, or indifferent, the one which possesses a sprinkling of blood is sure to be the animal which will be selected as a sire. His light action, showy appearance, and high-sounding pedigree, will be a sufficient recommendation to those who are ignorant of the various *points* and *qualities* which are connected with the strength, substance, durability, and disposition of the animal. Besides, the same horse is certain of being put to a great number of mares of all sorts, shapes, and sizes, without the slightest regard to that exact adaptation of form, in sire and dam, which is absolutely necessary in order to secure a satisfactory result. Breeding from blood-stallions is highly commendable, provided it is done with judgment and discretion; but the practice of *violent* crossing is decidedly objectionable, and cannot be too strongly condemned. 'Extremes in crossing,' says a writer in the 5th volume of the *New Sporting Magazine*, 'are very rarely successful; and it is really astonishing to see farmers so constantly putting their complete cart-mares to thorough-bred horses, expecting to have foals of a class fit for hunters, whereas, nine times out of ten, they are fit neither for draught nor hunting; for though they may be up to weight, which is what they expect, there is always a lamentable deficiency of pluck; and the same mare, with a three-parts bred

horse, would be likely to produce a very valuable class of horse—the coach-horse.' By the practice here referred to, the breeders expect to produce a horse combining both strength and action; but they are very frequently treated to an animal of such a non-descript form, that he is fit 'neither for the land nor the sea.' In place of being a fair medium between the sire and dam, he will take chiefly after the one in some parts, whilst in other places he will lean entirely to the opposite side; and he is consequently so badly balanced and proportioned, that he is comparatively useless. His temper, moreover, is frequently characterised by a want of conformity to the purpose for which his owner might think him in other respects best adapted."

The author next gives a short chapter on "Temperament," a subject which has hitherto received too little attention from veterinary teachers and horse breeders; this is immediately followed by what may be styled a concisely written essay on External Form and Structure, and by a short chapter on Shoeing. Practical knowledge of every part treated characterises the easy popular style in which these subjects are handled. In the ten pages on shoeing, our author, although renouncing all pretension to treat the subject fully, shows that he is quite alive to the prevailing deficiency of knowledge, and discusses the subject in a very different manner to any other modern English author. He is so far in advance of long-prevailing teaching that we can recommend his views as worthy of the attention of students and veterinary practitioners. At page 76, the author exclaims against removing shoes; we agree that such is always bad practice. We need not here enter on details regarding the motives which have kept up so injurious and false a measure of economy.

The author says, "When a horse is judiciously and suitably shod, he will go with ease and comfort immediately after he has come from the forge. It is only an excuse for bad workmanship to say, he will improve in his action after his shoes are worn a while."

With reference to paring the foot, and its preparation for the shoe, there is something wanting, and the old hackneyed phrase of "Make the shoe to fit the foot, and not the foot to fit the shoe," is not quite in keeping with the independent and original style which pervades the work. It seems to escape the sagacity of every writer, that in shoeing a horse two adapting surfaces have to be formed: firstly, that of the horse's foot, which we always find in an artificial state; and, secondly, the surface of the shoe to be applied to it. The knowledge how to do these is that *par excellence* required by the shoer, and which we agree is almost always wanting, and that is not supplied by the constantly-repeated phrase, Fit the shoe to the foot. The question is, What is the foot, what is its form, and what are its functions?

The author says: "There is no objection to paring the sole well at this place," alluding to the posterior angles of the sole, which he, as usual, calls the seat of corns. To such paring we entirely object; moreover, it requires no countenance or sanction from authors, since, from false teaching, it has become a deep-rooted vice with farriers. There would be no seat of corns if horses' feet were properly shod. We notice the above sentence, because approving so much of the

work before us, we feel obliged to point out that to which we are thoroughly opposed in practice.

At page 80 the author says, "It is difficult to convince smiths of the possibility of laming a horse by having the shoe too narrow in front. They generally think the whole difficulty lies about the heel." How differently and logically runs this argument to what is to be found in the majority of writings on the subject. So much has been said about the heels by everybody that it would lead to the inference that a horse's foot is made up of heels, whereas no one can point to the place indicated. Supplementary to his observations on the fore-feet and shoeing, the author returns to the fore-legs, their action, &c., and he here makes some remarks which should be read by every horseman. He says, amongst other things,—

"When viewed in front, the distance between the fore-legs ought to be, as near as possible, the same from the chest to the ground. This is the form which is most consistent with neat, straight, and speedy action.

"On taking a side view, we should observe the perpendicular direction of the leg. When it is directed backwards below, there will be too much weight in front of it, and the horse will be liable to fall. If, on the contrary, the foot is pointed far forwards, too much stress will be thrown on the back-sinews, and the action of the animal will be materially impeded; besides, this state of matters is sometimes indicative of disease in the feet. The leg should drop perfectly straight from its junction with the shoulder to the ground; and the point of the toe should come as near as possible to a straight line under the point of the shoulder.

"The elbow can easily be felt at the upper and back part of the arm. Its direction must be attentively examined, as it is an important point. It should neither be out nor in. When turned in towards the ribs, it will rub against the girths of the saddle or harness, and thus become the seat of a troublesome and annoying sore. The inward direction of the elbow is also accompanied by an awkward knee-action, and the toe is invariably turned out. It is a very common thing for horses with this formation to strike the toe against the opposite pastern. They are then called brushers. If they should happen to go free from brushing, however, they are generally very safe to ride or drive. When the elbow is turned out, the toe is turned in,—which is a very great fault—decidedly much greater than the reverse—as the horse is not usually safe to ride, nor is he possessed of speed. I once had the fastest trotting horse I ever saw; he was also remarkably safe and secure to ride, although his toes were turned in. But in his case the elbows were perfectly straight, and the turning-in at the toe was owing entirely to the peculiar setting-on of the foot, which made all the difference. I do not recollect of any instance of a fast and safe horse with his elbows turned out.

"The knees should never be laid back, although many people seem to be of a contrary opinion. They imagine their backward position is a point of great perfection. They will frequently tell you such a horse cannot go down, because he is so well back on the knees. In this they are certainly mistaken. By this formation, the back muscles and sinews of the leg are all interfered with, and materially curtailed in their action. Besides, the position of the knee has very little to do in preventing a horse from falling. If it were otherwise, what on earth would become of the horses which have their knees bent completely forwards like a bow? If the opposite shape were necessary to stability, horses of this description need not take the trouble of rising, as they would be no sooner up than down again. Still further, is it not a very singular thing that these doomed animals are seldom seen with a broken knee? The leg, on a side view, should be quite straight from the shoulder to the pastern. But if in any instance

the knee is to diverge from the straight line, let it always be forwards—never backwards. Some of the fastest, safest, and best horses that ever appeared on the turf, the field, or the road, were forward on the knees; but I never knew of a right good one whose knees observed a decidedly backward position."

The following observations are so completely in accordance with the views we entertain, and so opposed to old dogmas, that we must make one more quotation:—"If the horse lifts his foot clear of the road, and lays his heel first to the ground, he cannot fall, as stumbling is usually occasioned by striking the toe into the road, or striking it against a stone, just as the foot is being brought down into contact with the surface."

The remaining pages, comprised under the headings, "Judging the Horse," on "Breeding, "The Mare and Stallion," &c., we leave our readers to peruse with pleasure and satisfaction. Like the preceding parts, they are full of sound, lucid observations, and not only do we hail the little work before us as a useful manual for popular reading, but we should be glad to see it in the hands of veterinary students, that they might avail themselves, in practice, of the sound precepts it inculcates.

House Dogs and Sporting Dogs: their Varieties, Points, Management, Training, Breeding, Rearing, and Diseases. By JOHN MEYRICK. London: John Van Voorst. 1861.

THE very title 'Dog' is for a work a good recommendation to many purchasers. A little variety in the designation of the book is obtained by the one chosen. It is not, as the author declares in his preface, made up of extensive quotation and the introduction of anecdotes. These are culled almost entirely from Mr Meyrick's personal experiences. No author could accomplish satisfactorily, to the readers of a work on dogs, the task he imposes on himself, without much love and admiration for the animal. This is shown by Mr Meyrick's vindication of the character of the Bull-dog. He says:—

"There is no dog about which so many foolish exaggerations are current as the Bull-dog. Youatt expatiates upon his ferocity. 'The Bull-dog,' he says, 'is scarcely capable of any education, and is fitted for nothing but ferocity and combat.' This is utterly unfounded, and the Bull-dog is certainly a much maligned animal; his former connection with the brutal sports of the bear-garden has destroyed his reputation. Indeed, so little quarrelsome is this animal that he may be approached by strangers with far greater impunity than most other dogs, and is, as a general rule, more gentle and playful than any large dog I know of.

"In regard to his not being capable of education, I may observe that I have myself trained a Bull-dog as a Retriever, and found him at least as teachable and as intelligent as most other Retrievers.

"The nose of the Bull-dog is so fine, that instances have been known of their employment in tracking poachers, instead of bloodhounds; in doing which, not only a good nose, but great perseverance, tractability, and intelligence are required. Mr St John, in his *Wild Sports of the Highlands*, mentions a Bull-dog used in

tracking deer, whose performances in this way were the astonishment of all who witnessed them.

"The courage and pertinacity of the Bull-dog are, however, admitted by every one. He is, without exception, the boldest animal in the whole world. The game-cock has been mentioned as equalling him in this respect, but it should be remembered that the game-cock will turn from any animal but one of its own species.

"If anything would justify the accounts we read of this dog's terrible ferocity, it would be that he is so frequently kept chained up, than which nothing is more likely to spoil a dog's temper. Even this treatment, however, often fails to have its effect on the Bull-dog. I have repeatedly seen them, when their very limbs have been deformed by confinement, so gentle as to come out of their kennels to fawn upon the casual stranger.

"Stonehenge, in his work on the Dog, remarks that the modern Bull-dog has undergone a change in his appearance during the last fifty years, and that he is a smaller and neater dog than was formerly the case. This is doubtless true of some modern strains, in breeding which, small size is particularly aimed at; but there are some breeders who pay attention only to the traditional points of the pure breed, disregarding small size, a thin coat, and a very thin tail. So general, indeed, are these requirements in the Bull-dog, that recourse has been had to the Terrier cross, to obtain a finer coat and smaller size. In proof of this I may mention, that it is well-known to London fanciers, that a Bull-dog in London, lately celebrated as a stock dog, was the only short-faced dog in a litter—his dam having been a regular Bull-terrier.

"This impurity in the blood of our Bull-dogs is of more consequence than may at first appear; for, if the pure breed is allowed to degenerate, we lose our chief means of infusing fresh strength and courage into other races. For instance, though the cross with the Bull-dog has wonderfully improved the Greyhound, we could by no means be certain that that breed would be bettered by crossing it with the Bull-dog strain, if that strain itself were crossed with the Terrier.

"I was recently shown an extract from an old newspaper, describing the points of a Bull-dog belonging to a certain Mr Shandos, which I shall quote, as I believe it to be a faithful description of the true breed of Bull-dogs, for which this island has always been famous:—

"'On Tuesday se'nnight, at the Round House, Mr Shandos' dog 'Ben' was shown against Major Dyce's dog 'Moses,' for the sum of 25 guineas, as agreed upon. Mr Shandos' dog was pronounced the winner; but many gentlemen present in the pit declared that 'Moses' was the finer dog, and should have won the money. Nevertheless, four out of the five judges appointed to decide were in favour of Mr Shandos having won the prize. Major Dyce then offered that his dog 'Moses' should fight Mr Shandos' dog for a second 25 guineas, and that the dog who first dragged the other outside a ring scored on the floor of the pit should be accounted to have beat the other. But Mr Shandos objecting that his dog was young and unused to fighting, this wager did not come off. 'Ben' is a white dog, having a black patch over each eye, and a light spot of fallow on both eyebrows. He carries a low head and small ears. His coat is thick and close, but lies very smoothly, and has no black spots but on the head. His tail hangs low. His chest is very deep. His legs bowed out, and as thick nearly as a man's wrist. His head is heavy, the flews deep, and the forehead very broad. He stands 20 inches in height. Major Dyce's dog 'Moses' is a taller dog, of a white and brindled colour, having a saddle of the latter colour, as well as a patch on the left side of his head. He is in every way as handsome a dog, but that his back was pronounced too long.'

"To this description I can only add, that the *muzzle* should be very short, and the *lower jaw* projecting in such a way as to give the idea of being cut off square, at the same time that the *nose* and *upper jaw* turn up. The *back* should droop towards the insertion of the tail; the *tail*, instead of being very fine, should be rather short, but well covered with hair, and, if anything, rather thick where it joins the body. The prevailing *colour* of the Bull-dog should be white; some are entirely brindled, and a few quite black—but this is very rare.

"The head of a white Bull-dog may with advantage have one or two patches of black, or brindle over the eyes.

"The Bull-dog is faithful and vigilant, and these qualities, together with his formidable appearance, combine to make him the best watch-dog in the world.

"The evil reputation which has so long hung about this ancient and noble breed of dogs, should be no longer suffered to exist. Now that bull and bear baiting are happily things of the past, there can be no degrading associations about him, and it is high time that he should be held in the estimation which his good qualities deserve.

"Fashions vary with pet dogs as much as with other things, and some thirty or forty years ago the Bull-dog was a fashionable pet not only of the gentlemen, but of the ladies too, of those days. Some of my older readers may have seen Lady Castlereagh driving in an open carriage in the Park, with a full-sized Bull-dog occupying the place in the carriage which is now usually held by a Scotch Terrier or a King Charles Spaniel. The late Dowager Lady Sandwich had a famous breed of Bull-dogs, two of which were always allowed to live in the drawing-room at Hinchinbrook House. The picture of a stout Englishman with a Bull-dog between his feet is even now common on the continent, and was no caricature of our countrymen of fifty years ago."

Mr Meyrick furnishes us with some very sensible remarks on feeding, and alludes to the difference amongst animals, comparing horse, ox, sheep, dog, and other creatures, as to the frequency with which they need food. He furnishes information regarding common salt, and says:—

"While upon the subject of feeding, I must caution my readers against giving dogs salt as a promoter of digestion. Salt has a very bad effect upon all flesh-eating animals, and upon dogs in particular. Captain M'Clintock, in his *Narrative of the Voyage of the 'Fox' in the Arctic Regions*, mentions that a full meal of salted provisions will kill an Esquimaux dog—the hardiest breed of dogs, perhaps, in the world. Yet I am acquainted with a lady who persists in sprinkling the food of her lap-dog with salt for the good of his digestion!"

Regarding the quality of food—a subject on which many false and various opinions are entertained, we can echo Mr Meyrick's recommendations. They are as follows:—

"The best kind of meat for every description of dog is mutton; but, as it is too dear to feed any large number of dogs upon, horse-flesh is generally substituted for it, and they are found to thrive well upon it. The principal food of dogs, however, should be meal, and, of the different sorts, oatmeal is unquestionably the best; wheat-meal being too expensive, barley-meal too heating, and Indian meal not palateable and troublesome to cook. It is sometimes, however, advisable, from its cheapness, to feed dogs with Indian meal, in which case it should be boiled slowly for an hour or more.

"In large kennels it is usual to boil the meat till it is quite soft; then to remove it and stir in oatmeal, and let that simmer for a quarter or half-an-hour; after which it is allowed to cool in flat vessels. The meat, being then removed from the bones, is mixed with the porridge, or, as it is called, 'puddings;' the bones themselves should be given separately.

"Such a method of feeding, as by far the most economical, should be adopted where more than three or four large dogs are kept; the bones and scraps of meat not used in the house being slowly boiled in a large pot, and oatmeal mixed into the broth. By this means all the nourishment is extracted from the bones and the oatmeal relished by the dogs, whereas, if simply boiled and given separately, it is often rejected. The broth should be boiled every day in hot weather; every other or every third day in winter. Where enough meat cannot be got, greaves

make a cheap and tolerable substitute; they should be first softened by boiling, and then mixed with the oatmeal 'puddings.'

"Small house dogs may be fed almost entirely upon biscuits, or dry crusts of bread soaked in gravy or milk, which should in either case be poured boiling over the biscuits and then allowed to cool. Dogs so fed should have a bone or two given them daily, taking care that the bones are not so small as to be likely to be swallowed.

"Paunch and tripe, besides being a very cheap, are an excellent food for dogs; and that they will thrive upon them alone, is proved by the fact that a well-known dog-fancier who resides at Kensal New Town, feeds his larger dogs on nothing else. The smaller kinds, the Spaniels, Terriers and toy-dogs, he feeds on biscuit.

"Every dog should have, twice-a-week, fresh vegetables boiled in the broth which is given him: the neglect of this is apt to bring on a train of symptoms similar to those produced in the human subject by a deficiency of vegetable food; namely, heaviness, debility, aversion to exercise, and finally, instead of the well-marked symptoms of scurvy in man, the dog is attacked by mange in some form or another. Dogs should therefore have a due admixture of fresh vegetables, among which potatoes, which contain the peculiar vegetable acid required, are the best. It is probably to supply a deficiency of this acid that the dog is so often seen to eat grass.

"Besides having an antiscorbutic effect, the occasional use of vegetables obviates constipation, to which the dog is very liable. To effect this last purpose, boiled liver may also be given. When only occasionally given, it is a useful laxative, but has no effect if continually used."

We must skip two sheets of matter to consider the 15th chapter, in which the diseases of the dog are referred to. Mr Meyrick says:—

"In treating of this portion of my subject, I shall endeavour to do so in a manner that will be equally intelligible to the general and the professional reader. I do so in the belief that in many cases of disease the owner of the dog is more competent to have the charge of him, than the veterinary surgeon. The actual value of any dog is small in comparison with that of the horse, and the professional attendant can only be expected to bestow his time and trouble upon him in proportion to the smaller remuneration he receives,—and this is seldom enough; whereas the owner is disposed to take every care of an animal which is generally a favourite. In addition to this, many veterinary surgeons, who have made the horse their principal study, are perhaps not the best authorities for the treatment of an animal differing entirely from him in organization.

"While most disorders can, with care and the exercise of good judgment, be successfully treated by the owner himself, there are some obscure diseases which always require professional advice, and in surgical cases I should never recommend an amateur to perform any but the very simplest operations."

It is very remarkable that in the system hitherto pursued to teach the Veterinary Art, many of our practitioners are as much abroad in prescribing for a cow or a dog, as if they were called upon to administer a ball or a drench to an elephant or lion. They are often ignorant of those general principles which should give them not only an excellent notion of the diseases of all our domestic animals, but of the diseases of man himself.

We cannot with sufficient force repeat the caution given at page 161, where Mr Meyrick says:—

"The unprofessional reader should be on his guard against the incautious use of *mercury* in the diseases of the dog. This medicine, carelessly given, produces great and dangerous irritation of the coats of the stomach and bowels; but it is impossible to dispense with it, in the form of calomel or blue pill, in affections of

the liver. I should recommend its never being given in doses exceeding 3 grains. It is, nevertheless, a common habit of farriers and country practitioners to administer this drug in doses of 5, 10, or even 15 grains."

Many dogs are annually killed with nostrums containing tartar emetic, or with the drug itself, which they prescribe in large and oft-repeated doses. Regarding purgatives, our author says:—

"In prescribing for the dog, some attention should be paid to the practice of such unprofessional persons as game-keepers, farriers, &c., who use many time-honoured remedies in treating the diseases of the dog; some of them, no doubt, improper enough; but many of their receipts are founded on a long experience of the constitution of the animal, and of these advantage should be taken: for instance, the common purgative given to dogs by such persons, is a mixture of equal parts of castor oil, syrup of rue, and syrup of buckthorn. This mixture is strongly condemned by Mayhew, a recent authority, while Stonehenge suggests that the rue should be left out of the mixture, and that, as the buckthorn is quite inert, syrup of red poppies should be substituted for it. Now this syrup of red poppies has of itself no value whatever, except that of a colouring ingredient, whereas buckthorn is an old-fashioned and tolerably effective purgative, and, being very cheap, is used to eke out the castor oil, which is a dear medicine. The syrup of rue is carminative, and is useful in preventing the castor oil from producing vomiting, which it is apt to do in many cases. So certain am I of the value of this receipt, that I have myself used it for many years, and always with excellent effect."

Much might be said, and not all in terms of unqualified praise, regarding the diseases and their treatment, as related in the little work under notice, but we consider it a decided improvement on such a work as Mayhew's, and a worthy rival to the better productions by such an accomplished and well-known writer as Stonehenge. We can confidently recommend it as a safe and useful manual, and doubt not that it will be well received by veterinary surgeons, as well as that numerous class, the dog owners of Great Britain.

EDINBURGH VETERINARY REVIEW

AND

Annals of Comparative Pathology.

VIVISECTIONS IN FRANCE.

Our professional brethren in France have long been known to us as indulging on very slight pretence in the practice of operating on living animals. We have, on frequent occasions, observed useless and dangerous operations performed, for the single purpose of affording pupils an opportunity of admiring the Professor's manual dexterity. We must acknowledge their superiority in operative surgery; and in this they have a good handle against the arguments of one amongst us, who has accidentally been a conspicuous person in the duty very properly undertaken by the Society for the Prevention of Cruelty to Animals.

In the notices of the order issued by the Minister of Agriculture and Commerce in France against the well-known practices in veterinary schools, special allusion is made to Alfort. The defenders of the past system are, however, to be found in Lyons and Toulouse as well as in Alfort, though, owing to the exertions of Professor Delafond, now Director of the Paris College, an additional annual grant was accorded, not many years back, to increase the supply of animals for the students' benefit, and we have seen healthy young bulls, pigs, and many horses bought in weekly for Professor Delafond's demonstrations, and the advantage of his class.

No right-minded Englishman, reared with the ordinary sense of humanity, of which our country can boast not a little regarding our domestic animals, could fail to be disgusted at such unnecessary butchery, and we loudly condemned the practice. Several of the ablest experimenters, amongst whom we may rank M. Chauveau, agreed that there was a great deal of useless torture inflicted, but the practice was as firmly engrafted on the French system of teaching as the plan—cruel in an opposite sense—in the veterinary schools of Great Britain, of not doing what might be done on *dead* animals for the benefit of living and valuable ones.

We regret that there should have been any necessity for any member of the profession in these realms to face and condemn any of the doings of that powerful, learned, and unequalled body of teachers, who have laboured strenuously, and on scanty pay, for science. Where is the body of men on this side of the British Channel who, at the present day, can claim the honours and distinctions of Renault, Delafond, Bouley, Lecoq, Rey, Colin, Chauveau, and others, who have investigated and afforded the most valuable conclusions, from experimental research, on the origin and cause of many enzootic and epizootic diseases, on the physiology of the domestic animals, and a variety of subjects far too numerous to admit of exposition here?

However deeply we may lament the contrast afforded by Great Britain, and the knowledge that that contrast is a good handle in the grasp of our continental *confrères*, yet we hail with pleasure the result of the recent appeal to the Emperor of the French. We fear that the measure is too sweeping. It is out of the question to think of arresting scientific investigation. Stop, if you please, the tremulous hand of a young aspirant to surgical fame, in the act of trying which way he should burn and cut, at the same time protecting his own person from injury; but fetter the hands and works of men such as our Brown-Séquards, Richardsons, Listers and Harleys, Virchows and Valentines, Bernards and Chauveaus, and a sufficiently just and powerful outcry will be raised against the senseless arguments of many who cannot fathom the inestimable benefits conferred on science, and on mankind, by experimental research.

There is but one argument which our continental friends adhere to with pertinacity, and has a semblance of reason in it. It is that the lower animals are more difficult and dangerous to operate on than human beings, and it is only by practice on the living that sufficient dexterity can be obtained to ensure that the operator may not be severely injured, or that the animals of value to be operated on by veterinarians should not be uselessly blemished or destroyed.

They can find many cases in support of the fears entertained regarding unpractised hands. We have known a Professor plunge a trochar in a strangulated hernia, because he could not relieve the stricture, and the animal died in intense agony. We have seen another horse on the point of death, because another Professor knew not how to employ the taxis, by which the animal was ultimately cured, and in spite of the bungling practice of getting a dose of physic first. We have seen donkeys and horses destined to be killed lying on their

sides, for twenty minutes or half-an-hour, before an artery could be secured and opened to destroy the animal for the purpose of injection. We shall not continue this tale of sickening horrors, which betrays the deepest ignorance in quarters whence we challenge contradiction, and which teaches us and the Society for the Prevention of Cruelty to look at home.

Nevertheless, if a proper system of teaching is adopted, the arguments of the French prove thoroughly empty, and the ignorance of others is unpardonable. A correct system of teaching anatomy; a rational system of teaching pupils to handle animals, to tie them and cast them, and fix them for operations, which implies no more cruelty than bandaging men's legs, arms, and heads, for which our surgical porters get a few odd crowns added to their salaries; the performance of all operations on dead animals, and the practice of employing advanced students as dressers and assistants, when necessary operations are performed, will enable any school to send out worthy and useful men.

The veterinary professors in these realms have got into the habit of saying that practical men cannot be made at college. Certainly not on the disgraceful ten-months' system still in force in Great Britain; but we are quite sure that, however deep the sting, and troublesome the future duties of the French professors, they will overcome all with that zeal and indefatigable industry which have so worthily distinguished them. We sincerely hope the order, so far as students' operations are concerned, will be most stringently adhered to, and we yet trust to find many, who foresee from it the most disastrous results, hereafter participate in the belief that the study of surgery may be earnestly carried out, and skill acquired, without the infliction of pain on the dumb animals entrusted to us for our use and pleasure.

MR GABRIEL'S RESIGNATION.

Amongst the men of this generation whose names deserve to be remembered for faithful devotion to the interests of the Veterinary profession, is the gentleman who held the office of Secretary to the Council of the Corporation from the day of its existence. In a difficult, often very delicate, position, Mr E. N. Gabriel evinced, in the discharge of his official duties, qualities no less remarkable and

estimable than were those which secured him a large circle of friends in private life.

It was feared, in 1859, that a serious affliction would prevent the secretary's continuance in office; but a few months' absolute retirement had apparently resulted in such a complete recovery, as to encourage a hope that the loss might be averted. Had this hope been realized, none would have rejoiced more than ourselves, as no one, on public and personal grounds, more sincerely regrets the occurrences which prevented the Council re-electing Mr Gabriel to the secretaryship this year. Strictly speaking, his term of office expired the 6th of May—the date of the annual general meeting—and his subsequent resignation, and its acceptance by the Council, could scarcely be deemed regular. But this was really an occasion in which, consistently with respect for the fundamental statute, humane considerations suggested leniency. A similar motive prevents us entering into explanations which might aggravate affliction.

It is confidently anticipated, that those who had reason to complain of some of the late secretary's most recent official acts, will admit that the Council has disavowed them in the most prompt and effectual manner.

Mr Braby has kindly agreed to discharge the duties of the vacant office until a gentleman can be found willing and able to fill it regularly. It is matter for regret that the choice of the Council is restricted within very narrow limits, by the clause in the charter which enjoins that none but a member of Council shall be eligible for the secretaryship,—a limitation the removal of which will no doubt be one of the objects in view, whenever sufficient agreement shall have been arrived at, as to the reforms required, to petition the Crown for an amended Charter.

VIAL DE ST BEL AND BRACY CLARK.

THE busy time at the close of a winter session led to the tardy action in obtaining the sense of the profession, as to the busts which it is contemplated to have prepared of the above illustrious men, whose prominence in the early history of veterinary science, in these realms, merits some mark of recognition.

We now beg to call the attention of all to circulars which they have received, a copy of which is here annexed. We doubt not that ere

many weeks have passed, we shall be in a position to record satisfactory progress in that usually tedious process of obtaining money for the best of objects.

"New Veterinary College,
"Edinburgh, *May*, 1861.

"Sir,

"We have the honour of calling your attention to the following resolutions, passed at a meeting of members of the veterinary profession, in the Freemasons' Tavern, on Saturday, 23rd February,—T. D. Broad, Esq., of Bath, in the Chair:—

"I. Proposed by Professor Gamgee of Edinburgh; and seconded by F. Collins, Esq., V.S., 16th Lancers—

"'That as a most favourable opportunity now offers to obtain portraits in marble of Vial de St Bel, founder of the first veterinary College in these realms, and of Mr Bracy Clark, F.L.S., Member of the Royal Institute of France, busts should be executed, and placed in the Hall of the Royal College of Veterinary Surgeons.'

"II. Proposed by T. Broad, Esq., V.S., and seconded by J. J. Lupton, Esq., V.S.—

"'That in order to carry into effect the purpose of the last Resolution, a Fund should be raised by subscription amongst veterinary surgeons, and the friends of the late Mr Bracy Clark.'

"III. Mr Collins then moved, and Mr E. N. Gabriel seconded—

"'That the present members constitute themselves a committee, for the furtherance of the objects above specified, with power to add to their number.'

"Although a cast was made by Flaxman from the features of St Bel immediately after death, no farther steps were then taken towards the execution of a bust. Having obtained possession of this cast, we now propose to fulfil this too-long neglected duty towards the memory of the founder of British veterinary schools, and to place this bust in the hall of the Royal College of Veterinary Surgeons.

"In proposing a similar tribute to the memory of the late Mr Bracy Clark, we feel sure that we shall meet with the approval of the whole profession. While we honour St Bel as the founder of our first college, we cannot fail to regard Bracy Clark as one of the most distinguished veterinarians that ever lived; a man whose scientific attainments have gained for him celebrity not only amongst his own countrymen, but throughout Europe, and who, on being elected a member of the Royal Institute of France, received one of the highest compliments science can offer to her most devoted followers. We feel that we cannot allow so illustrious an ornament of our profession to pass away from amongst us, without raising some memento, to show in a measure our high appreciation of his worth, and one that may incite our students to emulate his achievements, and to deserve to be as well remembered by future members of our profession.

"To carry out this object, a sum of Two Hundred Guineas will be required, which it is proposed to raise by Guinea Subscriptions; and we have the honour to invite your aid and co-operation.

"Thomas D. Broad, Bath.
"William M'Kenna, Belfast.
"Joseph Gamgee, sen., New Veterinary College.
"James C. Broad, Paddington.
"William Cockburn, Glasgow.
"A. Robinson, Greenock.
"F. Collins, 16th Lancers, Hounslow.
"J. J. Lupton, London.
"Charles Hunting, South Hetton Collieries, Durham.
"R. L. Hunt, Birmingham.

"E. N. Gabriel, 10, Red Lion Square, London, *Secretary for England.*
"John Gamgee, New Veterinary College, Edinburgh, *Secretary for Scotland.*"

PROTECTION FROM QUACKS.

That essential basis of distinction between a qualified and non-qualified practitioner, whether in human or veterinary medicine, should, as far as law can accord any privilege, be secured. The homœopath and the mesmerist, the pill-vendor and the bone-setter, are likely to augment in numbers as population increases, and, in fact, in proportion to the extent of return which advertisements and deception will secure to this rapidly growing class. A rich country counts always many amongst its wealthy classes who have more money than judgment, and quite enough to bestow handsome fees, sufficient legacies, and much of a peculiar influence to enable the quack to strut and sneer, to feel his own importance, and turn to good account a prestige derived from the martyrdom which he is said to suffer at the hands of men whose distinction is often supposed to be simply due to a degree.

The veterinary profession is sapped of much life by the hundreds of persons who not only practise quackery, but under the disguise of an assumed title, the value of which is unknown. If several thousands can freely return as their profession in the census schedules 'Veterinary Surgeon,' instead of a few hundreds which represent the qualified body of British Veterinarians, it is evident that there is something seriously wrong somehow, that such a usurpation on the part of the cow-leech and pig-spayer should be tolerated.

It was understood at the Annual General Meeting of the profession,

first from Mr Gamgee, and then from Mr Spooner, that a non-qualified person might be prevented calling himself Veterinary Surgeon, or placing a brass plate entitling himself thus on his door. Why is this boon not conferred on our country practitioners? Shall we disregard the privileges granted us because we need more? Partial hunger is better than starvation, and some benefits are better than none at all. Let us avail ourselves of our present Charter, and any means to secure to us the good it was intended to confer, and then vigorously set to work to inspire those in authority with a just sense of the wrongs from which we unquestionably suffer, and obtain for the Veterinary Surgeons of the United Kingdom, protection to the extent enjoyed by our medical neighbours.

In the interest of science, of humanity, of our profession, and of the public, some means should be adopted to convince many that there is something more implied than the general name of a trade or business—to be pursued by whomsoever may choose—when the title 'Veterinary Surgeon' is used. No one ever cares to know what M.R.C.V.S. means. It has been referred to as a higher title than V.S. It is no such thing; and the Charter proves that they are one and the same. Just as no one would think of speaking of a surgeon as a Member of the Royal College of Surgeons, so would any one accept the title Veterinary Surgeon as implying the proper and only qualification of Members of our Profession. We shall be happy to receive communications from practitioners regarding the kind and extent of injury they suffer from the present state of things, and that may perhaps lead to some combined movement for that all-essential object—'Protection from Quacks.'

SUMMERING HUNTERS.

UNDER the head "Veterinarian," in the *Field* for June the 22nd, we find a paper on the above subject by Pan, which we have no hesitation in pronouncing to be well-timed and good. Scrutator, to whom the author refers, had previously written upon the subject, in a manner to be approved of, in *Baillie's Magazine*. We have no hesitation in stating that, alike on physiological grounds and deductions drawn from experience, comparing the present method of summering hunters with that adopted during the first quarter of this century, all advantages will be found on the side of the almost exploded practice, and a

large amount of loss and evil may be ascribed to the custom subsequently introduced. Few of our readers will perhaps know when, where, and by whom the change in the method of summering hunters was brought about, or the reasons, real or assumed, which gave rise to that change. To Nimrod, the late popular writer on the turf, the field, and the road, has been usually attributed much of the influence in bringing about the change; and much, no doubt, was directly effected by means of his then widely-circulated writings, and his personal intercourse with masters of hounds and studs of hunters. Nimrod we consider more as the mediator than the author in bringing about the double change in the mode of summering hunters. As far as our knowledge and experience serve us, we are led to believe that the late Mr Sewell was one of the earliest, if not the first, to urge and promote the change. We are not prepared to say at this moment when Nimrod's first letters in the *Sporting Magazine* appeared on the subject; but in 1823, Mr Sewell, then assistant professor at the London Veterinary College, declared that he had always found more accidents arising to, and deterioration in, horses, from their being turned out to grass, than whilst being kept at work. It was somewhat suddenly that Mr Sewell came to that conclusion, and it may not be uninteresting to notice one, if not the main, incident which led him to exclaim against the turning-out, and to advocate the indoor-nursing system. The circumstance to which we allude occurred in the summer of 1823, when a horse was brought to the College Infirmary injured from a kick whilst at grass. He was one of two horses belonging to a gentleman, which had been turned into a field with their shoes on, the result being a kick on the upper part of the ulna bone of one horse from the other; the calkin of the shoe had lacerated the skin, and it was discovered that a fragment of bone had been splintered off the ulna. The injury resulted in death, and then it was that assistant-professor Sewell laid down his opinion, and which, though hasty, was at once matured into a doctrine. About the same time, the subject of roaring was attracting much attention on the part of the members of the veterinary profession, and to the investigation into its nature and cause, Mr Sewell laudably devoted himself. It was not long before the notion prevailed, that turning out horses predisposed them to become roarers; so, what with the prevalence of lameness and roaring being raised against the system of turning horses out to grass, and founded, as it was supposed, on exact scientific knowledge possessed by Mr Sewell, a starting-point was given, which Nimrod

took up as the theme on which much of his subsequent eloquently written epistles were based. We believe we have here pointed to the first source of a practice which in a few years swelled to a violent current. It never occurred to Mr Sewell that the subscriber's horse met with his accident through sheer neglect, through turning his horses out for their gambol after long confinement with shoes on, and especially with hind shoes turned up at the heels,—in fact, turning horses to grass rough shod, instead of giving their feet the full advantages and play of their natural functions, the latter being always interfered with, and sometimes annihilated by the method of shoeing taught by the assistant and his principal, and commonly adopted. The change from a long tried, good, and economical method of summering hunters, to the present one of soiling, has been, we believe, instead of an improvement, altogether one for the worse. The adoption of the plan of keeping horses in the stable, and plying them with withered, half-fermented grasses, is the more to be regretted, because introduced for all classes of horses, even our colts have very short time, and very little space, for that essential exercise in growth, which nothing but the grass field can adequately supply. In this respect, those who have advised for the education of our youth of both sexes, have happily gone in a totally different direction, the cricket-field for our boys and young men, and appropriate exercises for the future mothers of our athletic race, according to means and station have all gone on progressing in a right direction, whilst our young breeds of horses have been nursed in swaddling clothes, to be speedily and prematurely used without intermission, under enormity of sufferings, until they become worthless. We have often, of late years, whilst looking over studs of hunters brought to London in the summer season, for sale, tried to compare their state and appearance with that of others which we have seen forty years ago, when exposed for sale under similar circumstances. We have no hesitation in saying, that the number of blemished and unsound horses greatly preponderates at present over the former epoch; then, it was no uncommon thing to see a stable of ten or twelve hunters in excellent form, mostly with fresh and wiry legs; now, instead, we find more tall, narrow horses, with shapeless legs, barbarously fired, as if the marks of the firing-iron were an ornament, and few of them with sound fore-feet to stand on; and we believe that not a little of the difference in the form of the horse, and his predisposition to defects, or, in other words, his want of form and stamina, is due to the preponderance of indoor keeping,

and diminished freedom necessary to develop the young horse and recruit the aged one.

As to the etymology of the word 'soiling,' we fail, by reference to our dictionaries, to learn when it was first used, as applied to a particular method of summering hunters; to *soil*, we are told, is to make dirty, to tinge with anything extraneous, to manure, to purge a horse by giving him grass. Taken, then, in the literal sense, we say, preserve our horses from soiling; practically, no less than on the grounds of physiological teaching, we pronounce our unqualified disapproval of the present custom. To keep our valuable horses in the stable to make manure, whether intentionally or not, is a most costly mode of procuring the article.

MEETINGS OF SOCIETIES.

WEST OF SCOTLAND VETERINARY MEDICAL ASSOCIATION.

PLEURO-PNEUMONIA IN CATTLE.

The members of the above Society met at the Glasgow Institution Rooms, on Tuesday, 4th June. Mr Steele, V.S., Biggar, President of the Society, took the chair; and after some private business, and the election of a new member, Mr M'Dougall, veterinary surgeon, Old Kilpatrick, addressed the meeting as follows:—

The subject I have selected for a few remarks, and the present discussion, is pleuro-pneumonia-epizootica in cattle, the origin, nature, and cure of which are as yet surrounded in mystery. Pleuro-pneumonia is generally believed to have a foreign origin, and to have been brought to this country by the importation of infected cattle. It made its appearance in Ireland in 1841, but whether it was imported by cattle, or originated spontaneously, as many epizootics are supposed to do, is as yet a matter of some doubt. Our Australian friends, I believe, are of opinion that it was on account of our exports to that country of infected cattle that they now suffer from its ravages. Without doubting their assertion, we well know that when it is once located in a district, it is not generally got rid off without reminding us of its fatality; hence we find that in Ireland many thousands of cattle became its victims, and soon extended its ravages to England; and in a very short time after it appeared in England, I was called, along with another veterinary surgeon, to examine a cow in our own district, which, according to the owner's statement, had been attacked by an unusual and peculiar disorder. Our attention having been attracted sometime previous in the *Veterinarian* to the symptoms of the malady, we had no difficulty in diagnosing this first case to be of the same nature as those which were described in this valuable periodical, and, as far as I am aware, it was the first that had occurred in Scotland. The case proved fatal, and upon a post-mortem inspection, our opinion was too truly verified as to the nature of the disease. How the first case, in my opinion, origi-

nated, admits of an explanation. The farm of Drumchaple, where this case occurred, is situated about six miles west of Glasgow, having the Forth and Clyde Canal passing through the farm, and it was discovered that at the time of the breaking out of this case a vessel partially loaded with foreign hides, on her passage upwards through the canal, was detained at this part where the cows were grazing. I am opinion that the epidemic poison was in all probability emitted from these foreign hides and breathed by the cattle, thus originating the disease amongst the farmer's stock. New cases occurred daily in the farmer's stock, which consisted of from twelve to fourteen cows, all the cases proving fatal, leaving only one living cow, which was considered never to have been attacked by the disorder. The disease spread rapidly in the surrounding country, and generally there was some medium of communication to account for its propagation. Having made these remarks, I will now shortly detail the symptoms of the disease; and as you are all well versed in them already, I will only mention a few of the more prominent of them :—Loss of appetite, entire suspension or diminution of the lacteal secretion if the cow is in milk; the breathing is much quickened, accompanied with a heaving at the flanks; the pulse is generally small and rapid, though sometimes it is full and strong; cough is generally an early symptom, though sometimes it is absent till the disease has made considerable progress; the nose is poked out; the muzzle dry; the mouth hot. As the disease advances there is an abundant flow of saliva; when the spine is compressed, much pain is evinced, and the animal gives a distressed grunt or moan; the back becomes arched; pressure on the intercostal spaces causes pain, and as the disease progresses the breathing becomes short and laborious, the saliva flows more copiously from the mouth, the animal refuses all food for some days, and at last dies exhausted. If the cow is in calf, she generally aborts, and if she has gone beyond the fourth or fifth month, it is a very unfavourable occurrence. During the progress of the disease, if the cow lies, it is almost always on the diseased side. There is one symptom I have not mentioned that you will discover at a very early stage of the disease, and often when there is no suspicion of the animal being affected. By placing the ear on the left side of the thorax, the heart will be heard to have a peculiar jerking, grating sound, which is accompanied by a throb. By this symptom I have been able in an infected byre to discover the disease when the animal was feeding and seemingly in her usual health. On auscultating the chest, we find the respiratory murmur is somewhat louder at first; in a few hours a distinct crepitus is heard. This soon disappears, and we hear a loud tubular sound, accompanied by a soft mucous rale, and as the disease advances there is an entire absence of sound generally over the base of one lung, or the greater part of both lungs. Percussion elicits a dull sound over the affected parts of the lungs, or over the chest generally. The treatment I have generally pursued may shortly be stated. I cause the animal, if it can be done, to be separated from all the others, and put into a comfortably warm, well-ventilated loose box. Counter-irritation in its most active form to the front and sides of the chest; small and repeated doses of Fleming's tincture of aconite, the bowels to be regulated by small doses of laxative medicine and nutritious opening food, such as boiled turnip, bran mashes, and, best of all, green food, if it possibly can be procured. This I follow, when the more active symptoms subside, by tonics, such as the preparations of iron, gentian, and ginger, and when much debility exists from the first, or supervenes afterwards, I give stimulants such as porter, whisky, and other alcoholic substances. On a post-mortem examination, if the disease has run its natural course, we find the lungs consolidated throughout, and infiltrated with a more or less coagulable substance. The surfaces of the pleura adhere in many places, and it contains in its cavities large quantities of serum, mixed with flakes of coagulable lymph. The pericardium presents similar appearances to the pleura, and generally its cavity is nearly filled by a dropsical effusion. The thorax in most cases also contains large quantities of a dropsical fluid. This disease I consider to be a specific and very acute inflammation of the fibroserous membranes of the thorax, and accompanied by a low typhoid type of the fever, which does not admit of

depletion and other reducing means that we generally adopt to check inflammatory action, and owing to the important and vital organs being affected, the disease pursues its fatal course unchecked, and death is the result in the vast majority of animals attacked.

Mr Anderson, V.S., Glasgow, rose and referred to some interesting facts which had been observed in Mr Harvey's extensive establishment at Port-Dundas. Mr Harvey is renowned as the proprietor of the most extensive town dairy in Scotland, and necessarily pays great attention to the best means of averting excessive losses by such a disease as pleuro-pneumonia. Last year he sent to England, and bought 100 young cows. These he at once subjected to the influence of contagion by placing them in byres with animals severely affected with the disease. By this means many became affected ; and, indeed, Mr Harvey believes that all take it, some in a mild and almost imperceptible form, and others are fatally attacked. He placed a certain number in a very roomy well-ventilated byre, in which abundant space was left between the animals; and the conditions seemed most favourable to a healthy condition of the cows. The remainder were huddled together closely in a more confined shed ; and according to ordinary hygienic notions the latter would have been regarded as the most unhealthy of the two places, but in the open and roomy byre the mortality attained 50 per cent., whereas in the close one the deaths only amounted to 5 per cent. The only explanation Mr Anderson could afford of this very singular and unexpected circumstance was that warmth appeared essential to recovery; and whenever animals are exposed to draughts of cold air, or kept generally cool, they had not such a good chance to withstand the disease. Mr Anderson spoke in favour of the old thatched roofs, and thought that the newly-constructed byres, with tyles on the top, were not so warm, and even not so well ventilated as the more rustic buildings which they were once accustomed to.

The *Chairman* remarked that Mr Anderson's observations were very interesting, and very just regarding the warming of byres.

Professor Gamgee then addressed the meeting, and said that the observations made by Mr M'Dougall, coupled with what had been referred to by Mr Anderson, pointed to several subjects of great interest in connection with the disease under consideration. In the first place, regarding the appearance of the disease in Scotland, Mr M'Dougall suggested the means whereby it had penetrated a part of the country, whereas, on the authority of Mr Horsburgh and others, there would be no doubt that in Edinburgh the malady was first observed to be imported by cattle brought from England to All-Hallow Fair. The disease then gradually spread forwards as animals in the ordinary run of trade were transferred to the north, and it was a year before any case occurred as far as Inverness. Mr Gamgee said that it was a very important fact that in many districts the disease was still perfectly unknown, and he referred to their worthy chairman and other experienced practitioners to substantiate, as he knew they could, what he then stated. If the circumstances which prevented the penetration of the malady to certain districts were investigated, he found, without exception, that it depended on farmers breeding their own stock, or purchasing from their near neighbours, who not only had never had the disease amongst their stock, but avoided public markets and buying in from unknown sources. He knew a dairyman in Edinburgh who for long resisted the temptation of buying cows in the Edinburgh market. As he needed stock, he procured it from his friends in Dumfriesshire ; and at the periods when the malady was very prevalent in Edinburgh, his animals escaped free. About three years ago he was constrained, from want of milk to supply his customers, to go to the public market for a cow. That cow communicated the disease to his stock, whereby be lost every animal, and then returned to his old system. Up to the present day there has been no recurrence of the disease. Referring to Mr Anderson's statement as to the cows in Mr Harvey's byre escaping from relapses when they had taken the disease once, he wished to observe that there were two causes operating in preserving the animals from subsequent attacks. The first was, no doubt, having the disease, but it was well known that when animals became thoroughly habituated to a byre, whatever

might be the conditions under which they were kept, they resisted the spread of disease far more than when freshly imported. He found that when called to places where the disease appeared to be spreading, great mischief was sometimes done by removing all the animals from the byres or courts they had been occupying, and placing them in fresh places or at grass. Such a change usually increased the rapidity with which the malady spread. Doubtless it was advisable to remove and destroy the diseased ones, and with reference to the remaining animals, great responsibility must be felt by veterinarians in advising any very decided line of action. Not only did he believe that they were not justified in sending a lot of lean or half-fed animals to market, to carry the disease further, but he found that this was often a ruinous procedure for the person on whose farm the disease appears. He had recently had occasion to test a method which he first learned from Professor Maffei of Ferrari, a man of great skill and extensive experience, and which method has recently been claimed as original in France. This plan is yet under trial, but his experience was most favourable to it. He referred to killing animals absolutely diseased, and administering to all the others preparations of iron coupled with aromatics. He was recently consulted by Mr John Simpson, farmer, Balmerino, Fife, who had a stock amounting to 9 three-year-olds and 11 two-year-olds in stalls feeding for the butcher, besides 14 lean animals in the court, and 5 cows in the byre. The disease was imported on the farm by diseased cattle, and appeared first amongst the cows and then amongst the feeding stock, both fat and lean. The morning he visited the farm two of the fat animals were severely affected. Mr Simpson wished to know if the stock had better be removed from the farm to make place for fresh animals to eat up his abundant supply of turnips and other food, whether he should send the whole to market to keep them on. Mr Gamgee ordered the removal of the diseased, and at once commenced the iron treatment. Though cases had been occurring daily before, the disease was at once checked, and no case has been seen since. This important fact, though single, supported many others adduced by continental veterinarians. And the explanation of the *modus operandi* of the preventative is very simple, inasmuch as it strengthens the animal to withstand against a poison, which may even be thrown out of the system without inducing the symptoms of the disease. It was entirely from the invigorating and health-giving power of the iron that it kept the malady in check. He advocated the most extensive trial of a system which was simple, and probably the most effective yet suggested.

Mr Anderson alluded to Mr Gamgee's observation that habit was a preventative. He begged to state that Mr Harvey's cattle were all young and fresh, thus taking the disease at once when placed with the affected animals, and afterwards escaping any relapse.

Mr Steele said that for the last fourteen or fifteen years he had seen much of the disease, but never on farms where the cattle were bred or bought from neighbours with great circumspection. He knew many places which by this means had remained quite free from the disease, whereas, wherever the disease appeared, it could be traced to market cattle.

Mr Robertson, of Greenock, said that he knew a whole district—Roseneath—where cattle were bred and not bought in, and no single case of the disease had ever been seen there. He wished to ask whether anything definite could be stated regarding the period which might elapse from the exposure of the animal to the influence of contagion and the manifestation of the disease.

Several speakers alluded to the variable length of the period of incubation, which is most commonly about forty days, but may be extended in animals in vigorous health, and capable of withstanding the potent causes operating to disturb their systems.

Mr Bryce, of Stirling, alluded to the occurrence of chest affections in cold and damp byres, especially in new-built steadings; and Mr Steele referred to the great frequency of disorders of the chest in Ayrshire cows. This he attributed to the delicate nature of many of them, and to the weather they are exposed to.

Mr Anderson, of Glasgow, thought that the predisposition to the lung diseases

in Ayrshire cattle might be owing to too much breeding in and in, and to animals being bred too delicate.

Mr Steele stated that cows with a good coat were preferred in districts where coarse weather was not uncommon.

Further remarks were made by several speakers in confirmation of what had been stated, after which the meeting adjourned.

IMPERIAL AND CENTRAL SOCIETY OF VETERINARY MEDICINE, PARIS.

A very spirited discussion attracted the attention of the members of the above society, at the meetings of the 14th of March and 11th April. It referred to the cure of Glanders by means of salts of arsenic, with a basis of strychnine, and by a mixture of the extract of nux vomica and arsenious acid.

M. Prangé stated that Professor Grimelli having obtained very beneficial results in the treatment of strumous affections in man, by the use of the bisulphate of strychnine and of the bisulphate of morphia, and that having afterwards substituted arsenious acid for sulphuric acid with decided improvement, he thought that the last mentioned salt might be used with success in the treatment of glanders and farcy. MM. Ercolani and Bassi, of the Turin Veterinary School, adopting the suggestion of M. Grimelli, administered the arsenite of strychnine and the biarsenite of strychnine to as many as 40 horses and mules affected with glanders and farcy, and those gentlemen found that the action of the double salt was much more prompt and rapid than that of the simple arsenite, cicatrising the ulcers on the pituitary membrane of the glandered animals, arresting the extension of the lesions already established in the lungs, and at the same time improving the condition of the animals. The dose of arsenite and of biarsenite was about four grains daily, and this was gradually increased to 12 or 14 grains. Great attention was paid during this treatment to the proper ventilation of the stables occupied by the glandered horses. MM. Ercolani and Bassi, however, improved upon their previous treatment, and substituted for strychnine the extract of nux vomica, which has the advantage of being cheaper, and at the same time quite as efficacious. The result of the treatment was definitely known in 30 cases out of the 40 before-mentioned, and of these eighteen are said to have been cured, while twelve died or were killed as incurable.

M. H. Bouley, in the course of his observations on Mr Prangé's paper, remarked that the question to be decided was, Were the horses treated and cured by the Italian veterinarians really glandered? M. Bouley was of opinion that the treatment recommended by the Italian veterinarians was well deserving of the attention of veterinarians; but as he was not at all certain that what the Italian veterinarians called glanders would be recognised as such in France, he could not place any confidence in the results of their treatment.

READINGS IN CLASSICAL MEDICINE.

I.—THE BRUNONIAN THEORY.

(From the British Medical Journal, June, 1861.)

[John Brown, the author of the famous Brunonian system, was born in the year 1736, at Buncle, in the county of Berwick. He was educated at Dunse, the same place whence came Duns Scotus, sometimes called the "subtle doctor." The parents of Brown put him first to a weaver as an apprentice; but he rejected the position, and, it is said, went himself as a reaper to get the means wherewith to pay for his education. He remained at the grammar school at Dunse until

1755; when his reputation as a scholar procured him the appointment of tutor in a family of distinction; thence, after a short time, he went to Edinburgh. Resigning the study of divinity in 1759, he commenced to study physics, and to grind in classics. In 1765 he married, and opened a boarding-house and academy for students of medicine. The design succeeded; and Brown, for a time, became the *protégé* of Cullen, afterwards to feel the sting of his patron's condescension. Quarrelling with Cullen, he published speedily his new theory of physic in the *Elementa Medicinæ*. He took his degree at St Andrews; and in 1776 was made president of the Medical Society of Edinburgh. In 1764, he instituted a free-masons' lodge, under the title, "The Lodge of the Roman Eagle." At last he became so embarrassed in Edinburgh that he has committed to prison, whither his students actually followed him to attend his lectures. Obtaining his freedom, he next made his way to London; here he tried to conduct a course of lectures, but failed; and published his *Observations*, which failed also. On October 7th, 1788, being then 52 years of age, he died of apoplexy in his bed, after having taken a dose of opium, to the use of which he was much addicted.

In figure Brown was held to realise Sancho Panza. He was excessively broad, with enormous features, and a crimson complexion; his voice was hoarse and croaking; and his dialect so marked as to render him scarcely intelligible to Englishmen. He was addicted to the use of intoxicating substances to such an extent that, it is said, he would enter the lecture-room with a bottle of whisky in one hand and a phial of laudanum in the other. Out of these materials he would concoct a draught, under which he commenced his exordium; for a time he was flat, but in a little time worked himself into fever heat, and declaimed, or demonstrated, or argued, in a virtual frenzy.

With all his faults he was a man of principle, and died so as to excite our pity rather than our scorn. One who knew him well thus spoke of him: "He was possessed of a great mind that supported him in all his distresses. He despised riches, detested everything base, and possessed such openness of heart as to be liable to be taken in by every knave."

Brown left two sons and four daughters, one of the sons was educated in medicine.]

The Brunonian System was one of those strange conceits by which medicine has at various times allied herself to metaphysical conspiracies against the simple observation of nature. It was a system peculiarly characteristic of the age in which its author flourished. At that time Hippocrates was ignored; and all that high class empirical observation on which Hippocrates made himself so great, was well-nigh snubbed out. At the same time, there was no experimental learning, either to correct, to advance, or to suggest. Men, therefore, framed hypotheses out of their minds, as they might frame poems or plays; and, as they made it a preliminary to lay down absolute premises, and to argue upon them, the results were usually logical on the premises.

In the absence of anything better in medicine, systems such as those described became extraordinarily popular; and as there never was any very great labour required to confute them, their popularity was not a little increased by the roughing they obtained through opponents. Poor Brown, consequently, secured an enormous popularity, and therewith more kicks than halfpence by many odds. In return, his temper soured by strife, he toppled off his stilts altogether, and let himself down to language which would have ruined Alexander the Great, even when he sighed for another world to conquer it. Speaking of Cullen, for example, Brown gives vent to the following virulencies:—

"This brat, the feeble half-vital, semi-production of frenzy; the starveling of strained systematic dulness; the forlorn outcast of the fostering care to which it owed its insect vitality, was now to be pampered by a crude and indigestible nutriture, collected from all the materials which had composed the several fabrications of former erroneous systems, was to be decorated with every foreign plumage, and in this its totally borrowed and heterogeneous form, instead of the hideous caricature which it was, contrived to excite the derision of mankind, it was to be

ostentatiously obtruded upon the world as a new and respectable doctrine, and held up, forsooth, as the rival of a splendid system."

We have paused for breath; let us proceed. Let us observe what was the splendid system which "the starveling of strained systematic dulness," Cullen, aimed to oppose. The principles of the system are delivered in outline by Beddoes, and a most correct outline it is. We give it entire, as embracing the fundamental propositions of the Brunonian doctrine.

The Brunonian Propositions.—It is presumed, as a preliminary fact, that it is the business of anatomy to explain the varied structure of organised beings. Consciousness, assisted by common observation, will distinguish animated from inanimate bodies, with precision more than sufficient for all the ends of medicine. The cause of gravitation has been left unexplored by all prudent philosophers; and Brown, avoiding all disquisition concerning the cause of *vitality*, confines himself to the phenomena which this great moving principle in nature may be observed to produce. His general propositions may be thus comprised:—

I. To every animated being is allotted a certain portion only of the quality or principle on which the phenomena of life depend. This principle is denominated *excitabality.*

II. The excitability varies in different animals, and in the same animal at different times. As it is more intense, the animal is more vivacious, or more susceptible of the action of exciting powers.

III. Exciting powers may be referred to two classes: 1. External, as heat, food, wine, poisons, contagions, the blood, secreted fluids, and air. 2. Internal, as the functions of the body itself, muscular exertion, thinking, emotion, and passion.

IV. *Life is a forced state.* If the exciting powers be withdrawn, death ensues as certainly as when the excitability is gone.

V. The excitement may be too great, too small, or in just measure.

VI. By too great excitement, weakness is induced, because the excitability becomes defective; this is indirect debility. When the exciting powers or stimulants are withheld, weakness is induced; and this is direct debility. Here the excitability is in excess.

VII. Every power that acts on the living frame is a stimulant, or produces excitement by expending excitability. Thus, although a person accustomed to animal diet may grow weak if he live upon vegetables, still the vegetable diet can only be considered as producing an effect, the same in kind with animals, though inferior in degree. Whatever powers, therefore, we imagine, and however they vary from such as are habitually applied to produce new excitement, they can only weaken the system by urging it into too much motion or suffering it to sink into languor.

VIII. Excitability is seated in the medullary portion of the nerves, and in the muscles. As soon as it is anywhere affected, it is immediately affected everywhere. Nor is the excitement ever increased in a part while it is generally diminished in the system; in other words, different parts can never be in opposite states of excitement.

The above eight clauses include, in brief terms, the whole of the Brunonian system. The modern student will read of it as a grand mystification, and will hear even with incredulity the amount of belief which it excited. Yet it is the fact, that the system did make, for a time, vast progress, and left, moreover, an impression which is to this day not entirely eradicated. Orally, the doctrine found its way through the length and breadth of Great Britain. In America, the famous Rush advanced Brunonian arguments; and professors, practitioners, and students, adopted them. The *Elementa Medicinæ* were translated on the continent in nearly every country. Rasori, towards the close of the last century, in an introduction to a translated copy of the work, published at Pavia, affirms that, in the University of Pavia, undoubtedly one of the first in Europe, there was hardly a student endowed with talents who was not a Brunonian; and that some of the most respectable professors held the author of the system in high estimation. In a word, it is well-nigh impossible in this day to form a compre-

hension of the immediate and extended influence excited by the writings of Brown in professional thought and opinion.

Brunonian Practice.—Did the Brunonian theory exert any force in practice? We may answer this safely in the affirmative. It took in this direction immense power, and, perhaps, it exercised that power to a good end. Had the theory, in fact, been universally accepted, and had it retained that supremacy which it at first took, we had heard little now in the way of novelty of the stimulating treatment of disease. Our modern stimulators would have had nothing novel to advance, and nothing critically onerous to bear. For the Brunonian system, not exclusively indeed, but to the largest possible extent, was the stimulating treatment of disease. We derive, from a tabulated history of the doctrine, drawn up by one of Brown's pupils, and dedicated to the master, that apoplexy, plague, palsy, malignant fever, gangrenous cynanche, confluent small-pox, hydrothorax, phthisis, contagious dysentery, intermittents, colic, dyspepsia, hypochondriasis, hysteria, epistaxis, menorrhœa, amenorrhœa, rheumatalgia, cholera, epilepsy, chorea, rickets, hæmoptysis, scrofula, typhus, gout, tetanus, scurvy, diabetes, dropsy, and jaundice, are each and every one to be treated by supporting or increasing the excitement, by the administration of stimuli; such stimuli as electricity, opium, ether, spirituous liquors, wine, musk, cinchona bark, snake-root, camphor, and rich soups, being advanced as the remedies.

There were named, at the same time, other diseases of the true sthenic and pyrexial type, in which it was recommended cautiously to reduce excitement; so that the extreme charge often urged against Brown, that his teachings promoted intemperance, is not entirely correct or fair. Beddoes, addressing himself specially to this point, says, in defence of Brown, that no writer insisted so much upon the dependence of life on external causes, or so strongly stated the inevitable consequences of excess. "It may be said," he continues, "that the author's life disproves the justness of this representation; his life, however, only shows the superior power of other causes, and of bad habits in particular. But, though the principles of the system in question did not correct the propensities of its inventor, it does not follow that they tend to produce the same propensities in others."

Some curious anecdotes are told concerning the introduction of the Brunonian principles in the treatment of disease. A student of medicine died of a low fever, in spite of the full and avowed use of diffusible stimulants. The body was opened in the presence of Brown, who remarked that the tissues were unusually fresh. The surgeon who was conducting the *post mortem* examination replied that, considering the circumstances, he had never seen an instance where putrefaction had made such little progress; to which Brown rejoined, "Then, gentlemen, I appeal to you if we may not consider this as a clear proof of the propriety of our practice."

On another occasion, he seized an opportunity to give his system demonstration in a singular fashion. He was suffering from an attack of gout; and after taking a spirituous dram in the morning, he called together half a dozen of his pupils to dinner in the after part of the day, and drank then until he was considerably affected by his potations. He explained that he had intentionally brought on himself a degree of intoxication, in order to show to his auditors how certain inflammations which were believed to depend on the phlogistic diathesis were best treated. For instance, before he commenced to take the stimulus, he had not been able to put his inflamed foot to the ground; but before he dismissed his company, he had recovered the perfect use of his affected member.

In the general application of his system, it does not seem that Brown himself ever had the opportunity of taking an active share; inasmuch as his chances as a practitioner in Edinburgh were destroyed by the rumour of a clandestine attempt on his part to treat a student named Isaacson by his own peculiar plan, while yet the youth was under the care of Drs Duncan and Monro. It is asserted that Brown saw the nurse who attended on Isaacson, and offered her a bribe to conduct the treatment he would suggest privately. It is further asserted that

one Dr Jones, a friend of Isaacson, was in collusion with Brown, and did actually administer to the patient diffusible stimulants on the Brunonian plan. Anyway, Isaacson recovered; and then the Brunonians, elated with the fact, pointed to him as one whom they, in spite of the attendant physicians, had rescued from the grave. The success to Brown was but a flash in the pan; for the facts and circumstances that were brought out thereupon, damned him for ever as a trustworthy practitioner.

Shall we attempt to analyse the Brunonian doctrine; and out of the multiplicity of its propositions, explanations, and definitions, endeavour to extract the grain of truth which it may contain? If so, let the analysis be brief, and the determination direct. The Brunonian system was false, because it was based on an erroneous induction. It rested, from beginning to end, on forged premises; it overlooked phenomena; and it connected results with nothing antecedent to them that could be considered either tangible or causative. It assumed for the body, as extant in it, a governing principle, which, for sake of words, it designated excitability; yet it confessed not to know what excitability is, or in what manner it is affected by the exciting powers. It took no note of the specific causes of individual disorders; but grouped together, in the most curious array, disorders which, to many now, and to all at one time, were absolutely and unmistakably distinct.

Nevertheless, the Brunonian system, with all its faults and falseness, has in it one distinct ray of truth. The ray is accidentally present, but still present. We said that the classification of disease in this system is curious; and so it is, because, while it is a classification arrived at, or guessed at, as if by an astrological formula, it is in the main correct. To put epilepsy, chorea, tetanus, and phthisis, under the same general head as asthenic disorders; to distinguish a difference between mild and malignant small-pox; to determine a distinction between acute rheumatic fever and those neuralgic affections known as rheumatalgia; in a word, to put into two great groups the diseases of the body with the precision of a modern nosologist; and all this on a purely hypothetical and fanciful premise, implies, to our minds, a singularity of intellect, and a poetical glimpse over a world of facts amounting nearly to the happy and ready comprehension of those who have glanced beyond all detailed laws, and, at one stroke of the pen, have reduced an arithmetical volume into an algebraical line.

In time, as knowledge, derived from an induction through which the mind shall ascend from the appreciation of particular parts to a conception of a unity, shall be amassed, a system may be originated which shall make the dream of the Scottish enthusiast a reality; yet were his system not less false, even then, as a system.

PERISCOPE.

GAPES IN BIRDS.

(*From "The Field,"* June 22, 1861.)

On the Parasite (Sclerostoma Syngamus) which gives rise to the Disease called "Gapes" in Birds. By T. Spencer Cobbold, M.D., Fellow and Member of the Council of the Linnæan Society of London; Lecturer on Botany, Zoology, and Comparative Anatomy, Middlesex Hospital College. (Reprinted, by permission of the Council, from the "Journal of the Proceedings of the Linn. Soc. for 1861," Vol. 5, No. 20).

In the year 1799, a letter from Dr Andrew Wiesenthal, Professor of Anatomy at Baltimore, U.S., was published in the second volume of the "Medical and Physical Journal," containing an account of a parasite infesting the trachea of fowls and turkeys in America. As this brief communication bears the early date

of May 21, 1797, and constitutes the first public record that we have respecting the above-named entozoon, I will introduce the subject by a short extract from Dr Wiesenthal's letter. "There is," he says, "a disease prevalent among the gallinaceous poultry in this country, called the *gapes*, which destroys eight-tenths of our fowls in many parts, and takes place in the greatest degree among the young turkeys and chickens bred upon old-established farms. Chicks and poults in a few days after they are hatched, are found frequently to open their mouths wide, and gasp for breath, at the same time frequently sneezing and attempting to swallow. At first the affection is slight, but gradually becomes more and more oppressive, and it ultimately destroys. Very few recover; they languish, grow dispirited, droop and die. It is generally known that these symptoms are occasioned by worms in the trachea. I have seen the whole [windpipe] completely filled with these worms, and have been astonished at the animals being capable of respiration under such circumstances."

Any one who has witnessed birds suffering from the above-named malady, known in this country also by the name of *gapes*, will at once have recognised the close accuracy of Dr Wiesenthal's description; and so far as the phenomenology of the disease itself is concerned, very little more has been added in the accounts which have from time to time appeared. The publication of the letter above referred to is accompanied by a simple woodcut representing one of the worms of its natural size, and another view of the same example three or four times magnified. The figures evidently depict a female; but the position of the reproductive orifice is not indicated, neither is the question of sexuality discussed.

On Aug. 1, 1808, the English naturalist, George Montagu, F.L.S., made a communication to the Wernerian Society, his paper being entitled "Account of a species of *Fasciola* which infests the trachea of Poultry, with a mode of cure." Montagu does not appear to have been aware of the existence of any previous record on this subject, as we gather from an editorial note appended to his memoir in the first volume of the Wernerian Society's Transactions. Fortunately our author gave a scientific description of the parasite, which consequently led to its being specifically noticed, under various titles, in the systematic works of Rudolphi, Dujardin, and Diesing; but by far the most elaborate accounts of this animal are due to the writings of Von Siebold, whose name legitimately stands at the head of helminthology.

This parasite has been found and recorded as occurring in the trachea of the following birds, namely, the turkey, domestic cock, pheasant, partridge, common duck, lapwing, black stork, magpie, hooded crow, green woodpecker, starling, and swift. I do not doubt that this list might be very much extended if our British ornithologists would favour us with their experience in the matter. Hitherto I have been surprised to find how few of those to whom I have mentioned the subject appear to be acquainted either with the nature of the parasite or with the various methods to be adopted in curing the disease to which its presence in the widpipe gives rise. In view, therefore, of adding something to our knowledge of its structure, and, more particularly, in the hope of directing general attention to the mode of checking its ravages, I have ventured to make it the subject of a special communication.

The specimens recently examined by me came into my possession last July, whilst on a visit to my friend, Mr William J. Fraser, at the Rookery, near Dartford, in Kent. Here my attention was directed to a small diseased, almost featherless, chicken, which I at once recognised as suffering from the *gapes*. The bird belonged to a brood consisting of eleven individuals, all of which were between six and seven weeks old. The ten healthy birds had individually attained a considerable size, an average example weighing 9½ ounces; but the infested chicken had only acquired a weight of 4 ounces, in consequence of the deteriorating influences of impeded respiration. Several other equally striking evidences of an imperfect nutrition were observable: among these were the extremely rudimental condition of the wattles, the small body as contrasted with the relatively much more highly developed extremeties, and the very scanty growth of the feathers, which, on several parts of the body, were entirely wanting; the healthy

birds being well fledged throughout. The strange habits of the chicken were also in keeping with its physical peculiarities. It held itself entirely aloof from the other members of the brood; and, as if to make up for its defective assimilating powers, tried to add to its substance by greedily devouring everything which came in its way, thus consuming fully two or three times as much as any other member of the brood. The only interruption to its constant eating during the day arose from the act of gaping, which took place at irregular intervals, sometimes as often as once every minute. The extension of the neck, and consequent elongation of the trachea, seems to have the effect of separating or unfolding the knot of inclosed parasites—sufficiently, at least, to allow of a certain degree of expiration and inspiration.

Having, on scientific grounds, stated my desire to experiment upon and cure this bird of its disease, Mr Fraser persuaded me to take it away, which I did a few days afterwards, and operated upon it in the following manner: A very small portion of carded wool having been dipped in chloroform and placed in front of the bird's nostrils, it was soon rendered perfectly insensible. The skin of the neck was then divided and the trachea slit up to the extent of about a quarter of an inch; and, introducing one prong of a pair of common dissecting forceps, I removed seven Sclerostomata. Six of these parasites were united in pairs, the odd worm being a female from which the mate had in all likelihood been rudely torn during the withdrawal of the forceps; and, if so, it escaped my observation. After I had closed the external wound with a single thread, the bird was permitted to wake out of its artificial sleep; and, notwithstanding that it had parted with a drop or two of blood, it soon recovered its legs, and ran about the table as vigorously as ever. Moreover, as if this were not enough to satisfy me as to its almost instantaneous cure, in a very few minutes afterwards it demolished the contents of a saucer partly filled with bread previously steeped in milk. An occasional gape was caused by an accumulation of frothy mucus within the injured trachea; but this obstruction the bird soon got rid of by a few shakes of the head, attended with sneezing. The only subsequent inconvenience to the bird arose from emphysematous distention of the cellular tissue of the head and neck. This was on two or three occasions relieved by a slight puncture of the extremely thin integument, the emphysema ceasing to form after the external wound had healed. Unwilling to lose sight of this chicken, I took it with me into Norfolk, where it was well fed, and rapidly attained the size of an ordinary full-grown pullet. A few days ago it was returned to me alive, having attained the weight of 2 lb. 8½ oz. I have since caused it to be killed; and, on dissecting the neck, although there was no scar externally, a distinct cicatrix indicates the site of the operation on the trachea—the divided cartilaginous rings, six in number, being united only by a thin layer of connective tissue.

Reverting now to the entozoa extracted from the trachea, I observe, in the first place, that the females have an average length of $\frac{5}{8}$ths of an inch, the males scarcely exceeding $\frac{1}{8}$th of an inch. In both sexes the bodies are tolerably uniform in breadth throughout; and that of the female measures 1-35th, whilst the transverse diameter of the male is only from 1-60th to 1-50th of an inch. The heads are relativeiy even more disproportionate. In the fresh state the mouth of the female was seen to be furnished with six prominent chitinous lips; but the conspicuousness of the latter became much lessened after the specimens had been placed in spirit.

In both sexes the surface of the body is quite smooth, but the female displays a series of spirally-arranged lines, which at first sight convey the idea of a natural twisting of the body; this torsion, however, is more apparent than real, being likewise more marked in some individuals than in others. The body of the female, towards the tail, exhibits a decided tendency to fold upon itself; and in one example this feature was very significant. The lower part of the body preserves a tolerably uniform thickness almost to the extremity, where it is suddenly constricted to form a short narrow mucronate pointed tail, scarcely visible to the naked eye. Employing a pocket-lens, it is easy to observe through the transparent integument the spacious digestive canal, surrounded on all sides by sinuous

foldings of the ovarium, tuba, and uterus—the vagina terminating laterally at a point corresponding with the line of the upper fourth of the body. Here the male is usually found rigidly affixed by means of a strong membranous sucker-like bursa, which proceeds from the lower end of its body. This cup-shaped appendage is formed out of a folded extension of the dermal covering, which thus envelopes the centrally-enclosed and rounded tail. The membrane of the bursa is simple, transparent, undivided, smooth at its free border, and strengthened internally by a series of projecting rays, the precise number of which I could not ascertain with certainty. Probably there are twelve, but I only recognised nine. These rays appear to me to be simple, firm, chitinous bands, whose purpose is to fix and support the bursa, in the same manner as we find the whalebone rods employed to distend the hood of an umbrella. Acting antagonistically to these rays we also find a pair of strong retractor muscles, which, taking their origin a little higher up on either side, converge below to be inserted into the base of the cup-shaped bursa. In addition to these structures, a very distinct view of the penis can be gained by transmitted light. This organ, in the retracted condition, is entirely concealed within the caudal prominence. It is very small, only about the 1-225th of an inch in length, and consists of two narrow cylindrical spicules, which, though distinct, are firmly united at their lower third.

In regard to the peculiar mode of union of the sexes, it becomes an interesting point to ascertain whether there be an actual incorporation of the substance of the organs during or after the act of impregnation. In my specimens none of the three pair were organically united, and I succeeded in separating one pair very readily. Dujardin speaks of them as being soldered together, whilst the statements of Von Siebold are still more explicit. In connection with this subject, the latter observer makes (Wiegman's Archiv. for 1836, p. 106) the following comment: "The two sexes of almost all round worms are united only at the time of copulation. The male of *Heteroura androphora* has also the habit of remaining connected with its mate beyond the period of copulation. Here, then, there is a continuous union of the two sexes without a growing together: and in *Syngamus trachealis* there is ultimately a lasting continuity of the sexes by means of an actual growing together."

Having entire confidence in Von Siebold's statement, I am bound to conclude that the sexual union in my specimens had only recently been effected; but, admitting this to have been the case, one naturally asks in what manner can the mature eggs make their escape, seeing that the vagina is blocked up by the intromittent organ and bursa of the male? Clearly the eggs can only escape by an eventual breaking up of the body of the parent; this result, however, is quite admissible, as it constantly happens in the cestode proglottides, where the vaginal orifice is too small to allow of the escape of the eggs with their contained six hooked embryos. The eggs of *Sclerostoma Syngamus* are comparatively large, measuring longitudinally as much as the 1-250th of an inch, their transverse diameter being just half the above measurement; the length of the yelk is 1-250th from pole to pole. The process of segmentation of the yelk accords with that observable in nematodes generally, the spherical cellules averaging a breadth of only 1-2500th of an inch. The egg itself is oval, and bordered by two extremely delicate and transparent envelopes, whose curvatures at either pole are slightly interrupted, and the eggs consequently present truncated ends when viewed in profile. Many of the oval contain fully-formed embryos; and in the centre of the lower third of the body of one of them I distinctly perceived an undulating canal, probably consituting the as yet imperfectly formed intestinal tube. By whatever mode the young make their *exit* from the shell, it is manifest that prior to their expulsion they are sufficiently developed to undertake an active migration. Their next habitation may occur within the body of certain insect larvæ or even small land mollusks; but I think it more likely that they either enter the substance of vegetable matters or bury themselves in the soil at a short distance from the surface.

Finally, I propose very briefly to notice the various methods which may be

adopted with the view, on the one hand, of checking the destructive influences of this parasite, and, on the other hand, of limiting its abundance.

First, When the worm has taken up its abode in the trachea of fowls and other domesticated birds, the simplest plan consists, as Dr Wiesenthal long ago pointed out, in stripping a feather from the tube to near the narrow end of the shaft, leaving only a few uninjured webs at the tip. The bird being secured, the webbed extremity of the feather is introduced into the windpipe. It is then twisted rouud a few times and withdrawn, when it will usually happen that several of the worms are found attached. In some instances this plan entirely succeeds ; but it is not altogether satisfactory, as it occasionally fails to dislodge all the occupants.

Secondly, The above method is rendered more effectual when the feather is previously steeped in some medicated solution which will destroy the worms. Mr Bartlett, superintendent of the Zoological Society's Gardens, employs for this purpose salt, or a weak infusion of tobacco ; and he informs me that the simple application of turpentine to the throat externally is sufficient to kill the worms. To this plan, however, there is the objection, that, unless much care be taken, the bird itself may be injuriously affected by the drugs employed.

Thirdly, The mode of treatment recommended by Mr Montagu appears worthy of mention, as it proved successful in his hands, although the infested birds were old partridges. One of his birds had died from suffocation ; but he tells us that " change of food and change of place, together with the infusion of rue and garlic instead of plain water to drink, and chiefly hempseed, independent of the green vegetables which the grass-plot of the menagerie afforded, recovered the others in a very short time."

Fourthly, The plan I have here adopted by way of experiment. This method is evidently only necessary when the disease has so far advanced that immediate suffocation becomes inevitable ; or it may be resorted to when other methods have failed. In the most far-gone cases instant relief will follow this operation, since the trachea may with certainty be cleared of all obstructions.

Lastly, The most essential thing to be observed, in view of putting a check upon the future prevalence of the disease, is *the total destruction of the parasites after their removal*—a precaution, however, which cannot be adopted if Mr Montagu's mode of treatment is followed. If the worms be merely killed and thrown away (say, upon the ground), it is scarcely likely that the mature eggs will have sustained any injury. Decomposition having set in, the young embryos will sooner or later escape from their shells, migrate in the soil or elsewhere, and ultimately find their way into the air-passages of certain birds in the same manner as their parents did before them.

Journal des Vétérinaires du Midi. April to June, 1860.

III.—Should a Horse with Discharge from the Nose and Ulcers on the Schneiderian Membrane be regarded as Glandered ? By M. Reboul.

M. Reboul publishes some observations on the difficulties of diagnosing glanders, and asserts, most positively, that ulcers in the nose are not necessarily diagnostic of glanders. He relates a case to which he was called on the 24th of December, 1832, affecting a horse which belonged to an orange-merchant, and which was frequently subjected to long journeys and exposures. For two years, an intermittent discharge, sometimes abundant, had been observed. The animal's condition was good, but the submaxillary glands were swollen, the discharge considerable, and slight ulcerations existed on the pituitary membrane. Reboul regarded this as due to a persistent coryza rather than to glanders, and as the authorities had interfered, he ordered the horse off work for twenty or thirty days. Bleeding setons and steaming the nostrils were employed ; the bleeding was repeated on the 29th December, and by the 17th January the ulcers were all healed, but the discharge continued. Reboul was confirmed in his opinion that the horse was not glandered, and three veterinary surgeons acquiesced in it.

[Few would doubt that ulcers in the nose occur in horses that are not glandered, but we think it prudent at all times to act on the side of extreme caution, and assume in the majority of cases that the ulceration, coupled with swollen gland and discharge, are sufficient to determine the existence of glanders. —Ed. *Edin. Vet. Rev.*]

IV.—Rot in Sheep, or Cachexia Aquosa. By Raynaud.

This writer regards the rot in sheep as a parasitic disorder, and suggests that the destruction of flukes implies the cure of the disease. This, he says, he accomplished by giving from one to three spoonfuls of soot to sheep, and he attributes its efficiency to the pyroligneous oil it contains. He also recommends grain of lupin, a rich nitrogenous food, as a means of strengthening the animal, and preserving it from the disease.

V.—Clinic of the Imperial Veterinary School at Toulouse. By M. Serres.

In the quarter ending May, 1860, 2269 horses and cattle were visited. 161 horses were admitted into the infirmary, 1955 were seen at the morning consultations, and 32 visited. 121 head of cattle, of which 26 were admitted into the infirmary, 59 were seen at the morning consultations, and 36 were visited by the students.

Amongst the horses, there were—

Of diseases of the respiratory organs, 106 cases, viz., 50 laryngitis, 13 laryngo-pharyngitis, 18 acute bronchitis, 4 chronic bronchitis, 21 pneumonia.

Of diseases of the digestive organs there were 86 cases, of which 20 were inflammatory colic, 14 colic due to indigestion, 18 slight enteritis, 30 gastro-enteritis, and 4 chronic gastro-enteritis.

Only one case of death in the whole.

Twenty-two cases of periodic ophthalmia were observed and treated successfully by nitrate of silver ointment. Twenty cases of chronic glanders were likewise seen. A case of obliteration of the parotid duct, one of salivary abscess, and another of fracture of the lower jaw, complete the cases in horses.

In large ruminants, thirteen cases of indigestion were seen, two of tympanitis due to chronic lesions, three of gastro-enteritis, two of pneumonia, and two of mammitis.

M. Serres mentions a case in a dog, in which the case of an inguinal hernia was injected with iodine, and another of hernia of the uterus in a bitch.

NEW VETERINARY COLLEGE.

Examinations for Honours—Winter Session, 1860-61.

These examinations consist in written answers to questions on several subjects, the candidates being enclosed during the period of the competition.

The successful students were:—

Anatomy—*Junior Students.*

Silver Medal.—Daniel M'Gregor, Scone, Perthshire.

First Certificate of Merit.—William Dugend, Udny, Aberdeen.

Second do.—William Dearlove, Kirby Overblow, Yorkshire.

Anatomy and Physiology—*Senior Students.*

Silver Medals.—William Fordie, Thurston, Dunbar; William Mackie, Aberlour—equal.

Certificate of Merit.—James Gordon, Auchmaliddie, New Deer.

Veterinary Medicine and Surgery.

Silver Medal.—George Robertson, Ellon, Aberdeenshire.

First Certificate of Merit.—James Gordon, Auchmaliddie, New Deer.

Second do.—William Mackie, Aberlour.

Third do.—William Fordie, Thurston, Dunbar.

EDINBURGH VETERINARY REVIEW

AND

Annals of Comparative Pathology.

ORIGINAL COMMUNICATIONS AND CASES.

Lectures on the Principles and Practice of Shoeing, delivered in the New Veterinary College, Edinburgh. By JOSEPH GAMGEE, Sen.

LECTURE III.

GENTLEMEN,—Towards the conclusion of the preceding lecture, I took special care to guard you against falling into the very common error of regarding the hoof as unorganized and dead matter. But while it cannot too often be repeated as a truth of the most direct and weighty practical importance, that the hoof of the living horse is itself a living structure, you must, at the same time, bear in mind the fact that the horn of which it is composed is endowed with physical properties—elastic in particular—which play a very great part in the economy of the foot in health and disease. When, in due course, we enter upon the study of the physiological division of the subject, I shall have occasion to discuss at length that great property which Strickland Freeman pithily called the "spring of the foot," and which, under the designation of "elasticity" and expansion, has been one of the most fruitful themes of discussion in veterinary science. This spring or elasticity is referable to the varied yet harmonious organization of the whole foot, and is largely contributed to or permitted by the elasticity of the horn entering into the formation of the hoof. After the protest I have entered in behalf of the vitality of the hoof, I have no fear of being misunderstood, when I invite your attention to the *physical* elasticity of the horn as something independent of, though subservient to, what, for the sake of distinctness, I would term the *vital* elasticity of the foot.

Another common error against which I have to guard you, is that implied in the comparison of the hoof to "a horny box." The idea of fixity or immobility conveyed by this expression I have already confuted; but it is equally important to remember, that the character, relations, and manner of union of the different parts of the hoof is widely different from that mechanical apposition of similar

parts which the term 'box' conveys. As clearness is one of my principal objects, I do not scruple to recapitulate that the wall is composed of fibres longitudinally disposed, that it is thickest in front, and gradually thins towards its prolongations backwards, where, on each side, it is inflected inwards. These inflexions have all the distinctive characters of the wall, even to the fine horny laminæ distributed over the whole of its inner surface, which is defined by its particular interlaying plates, with the exception of the *cutadural cavity*, the inner surface of which is marked by numberless little circular depressions throughout. The different character is most perceptible to the touch, for, on passing the finger transversely round the inner surface of the wall over the laminæ, a soft velvety feel is imparted, while the tactile sensation is one of fine rough hardness in the cutadural cavity.

The sole is a thick concave plate, consisting of superimposed layers of horn intimately connected with the wall, and forming the floor of the hoof, with the exception of a spacious gap posteriorly, which is filled up by the triangular and eminently elastic frog. The frog widens out, and becomes thin as it extends backwards to cover the bulbs of the heels, and to extend into the *coronary frog band* of Bracy Clark, a delicately yielding structure which closes in the hoof posteriorly, and at its upper part. For the sake of continuous description, I have postponed to the last, in this brief recapitulation of the structure of the hoof, notice of the horn deposited as a kind of cement, as an additional bond of union between the wall and the sole, particularly at the anterior point or toe, where it is three or four times as abundant as at the posterior angles.

In the order proposed, the bones of the horse's foot call for present examination.

Three bones are contained within the hoof: 1stly, The os pedis, the foot, pedal, or coffin-bone; 2ndly, The os naviculare, the navicular, sesamoid or shuttle-bone; 3rdly, The os coronæ, or coronary bone. As these bones will be minutely described to you by the Professor of Descriptive Anatomy, I need not dwell long in pointing out their principal distinctive characters, but steadily keep in view the object of this part of my course, to enable you to understand the functions of the foot in their requirements on the art of shoeing, and to the prevention and treatment of lameness.

The os pedis, or foot-bone, is the one of which several specimens are on the table before you. Its appearance will strike you as very different from that of any other bone, and the more closely you examine it, the more you will be impressed with its numerous peculiarities. When you bear in mind the usual classification of bones into long, short, flat, and irregular, you will have no difficulty in recognising the os pedis as belonging to the latter category; yet is its irregularity in all main features symmetrical in the two halves, and not as to admit of methodical description. The bone is light in the hand, as you would be led to infer from its apparently porous structure. It is a small

bone, and yet, from the wide distribution of its component parts, it covers considerable space, offers attachment and protection to many structures, has a large articulating surface, and presents several fulcra for advantageous leverage. Lightness and strength—the characters of a shield and of a base of support—the qualities necessary for motion and for rest, are marvellously combined.

The anterior surface is convex from side to side, and generally rough in its lower two-thirds; but while the roughness is superiorly irregular, and marked by numerous jagged projections and large apertures for the transmission of blood-vessels, it is finely reticulated lower down, the meshes and fibres of the network being for the most part longitudinally disposed. The inferior surface is comparatively smooth, and decidedly though slightly concave; the concavity of the inferior surface of the bone is more marked in the hind than in the fore-foot. The coffin-bone of the hind-foot is less expanded in its base, with a more obtuse point, corresponding to the relative difference between the fore and hind-foot; the retrossal processes are narrower in the hind-foot, and are less pronounced, as are also the cuniform processes, than in the fore. On the quarters, and to the extreme backward point, this surface presents practically the same appearance as at the toe, but towards the middle its posterior third is irregularly yet smoothly excavated for the passage of two large vessels, and for the insertion of important structures, which I shall name to you from behind forward: 1stly, A ligament connecting the navicular to this, the pedal bone; 2dly, the long flexor or perforans tendon, inserted by a fan-like expansion to the whole of the curved line which marks the separation of the inferior surface into two distinct portions; 3dly and 4thly, this line, and the little depression in its middle, gives attachment to the fibrous structure of the sensitive sole and to the fibrous frog, on which more hereafter.

In whatever aspect you place the foot bone, you notice on each side a winged-like projection backwards, consisting of two processes; the lower one, which is also the largest, and by its inferior surface corresponds with the inferior surface of the bone, was named by Mr Bracy Clark, the *retrossal* or *retrosseous* process; the upper and smaller projection on each side was, by the same authority, named the *scutiform* process. The scutiform process, by its upper margin, offers attachment to the lateral cartilages, whereas, in the marked indentation just in front of each are implanted the lateral ligaments which bind the os coronæ to the os pedis.

On reverting to the anterior surface of the foot-bone, you observe that it is smooth, superiorly corresponding to a pyramidal projection, which plays a most important part in the economy of the foot. The long extensor tendon is implanted into the anterior surface of this prominence, whereas its posterior aspect is covered with cartilage, and is continuous with the upper surface of the bone.

In consequence of the pyramidal process forming, as just observed, a part of the foot joint, a marked obliquity downwards and back-

wards is given to the articulating surface, rendering very difficult, if not impossible, dislocation forward of the coronary bone, and at the same time adapting the os pedis for a base of support and for action, as one in a series of bones placed obliquely above it. In other and fewer words, whereas the inferior or resting margin of the bone approaches a level, its upper or articulating surface is oblique. In speaking of the inferior or resting margin, I merely do so for the sake of brevity; it is not on the edge alone, but on the whole inferior surface, that the foot rests, the arch giving strength, and the level margin admitting of an even distribution of the inferior cumbent weight on a firm base of support. Very different, I repeat, is the oblique direction of the upper or articulating surface, a part of which I invite you to bear in mind as fundamental and essential,—never to be forgotten whenever the mechanism and action of the foot as a part of the mechanism and physiology of locomotion is under consideration.

The articulating surface of the os pedis is marked by a median prominence, on each side of which is a shallow excavation, widening from before backwards and from above downwards, and both are bounded posteriorly by an oblong, flat, and narrow surface, to the posterior and under margin of which the navicular bone is attached.

The navicular or shuttle-bone is of an oblong form, is connected, as we have just noticed, to the posterior part of the coffin-bone, with which it has an extensive attachment by ligament, and has also an articulating surface with that bone. This bone is covered by cartilage, lined by a sinovial membrane on three surfaces; the margin around gives attachment to ligaments. Anteriorly to its inferior margin is attached a flat ligament, which strongly unites it to the coffin-bone; its two ends also give attachment to ligamentary fibres, which are intimately interwoven with the fibrous tissue and the inner lining of the lateral cartilages. By these attachments a certain degree of descending and backward motion is provided. Throughout the extent of its lower ledge is attached the capsular ligaments, one enclosing the joint of the foot at the articulation with the lower end of the os coronæ. The lower capsule forms the circumscribed synovial cavity which lubricates the under surface of the bone. Like the coffin-bone, it articulates with the coronary bone, and in its upper articulating surface is identical in form with the coffin-bone, with a median prominence and a shallow depression on each side. The under and posterior surface of the bone is its broadest part; it is there wholly lined by sinovial membrane, where a joint capsule is formed by means of the broad and dense expansion of the flexor tendon, a little posterior to its insertion. On this inferior surface the bone is composed of a median ridge, with a very slight concavity on each side; thus formed, it is about a third thicker in its centre than laterally. The joint capsule which is formed under the navicular bone, and which is closed up by the capsular ligament at its posterior margin, is commonly called the navicular joint. The navicular bone occupies a transverse position

in the centre of the foot; it forms a moveable ledge to the coffin-bone, with which it is in exact apposition.

Reserving for a future time much that I shall attempt to say on the Physiology of those parts collectively, I cannot pass on without specially noticing some of the leading characteristics in the economy of this, as well as of the next bone to be considered.

But for the important functions we are about to notice, the navicular might have been a mere fixed process of the coffin-bone; seeing that it is not so, and with collateral observations, we are enabled in some measure to interpret the wisdom of nature in the beautiful structure before us. We have said it is a moveable or yielding ledge; it is on this bone that the weight of the animal is first conveyed; its office is, in harmony with other organs, to break off concussion. To illustrate faintly this provision of infinite wisdom, we may adduce, as a rough comparison, to what we sometimes see and do; if we want to move a heavy weight composed of fragile material, say some valuable work of art, in turning it over on to a hard body, we place a yielding ledge, a plank, or elastic cushion, to break off the jar, and then complete the revolution by turning it on to the more solid substance: that is exactly what takes place with regard to the navicular bone, as we shall further notice, in connection with the next bone to be described. Posteriorly and inferiorly, its office is that of a pulley, as we shall also notice hereafter.

The os coronæ (or small pastern bone) is a short, solid, strong bone. As we have said, the navicular might have been a process of the coffin-bone; so, in looking at the small pastern in its connection with the os suffraginis (or long pastern), with which it is attached above, we are led to comprehend its uses in the economy of the foot and limb. The length of the two bones when connected, ranges from about 5 to $6\frac{1}{4}$ inches in different-sized horses—the small pastern being about a third of the whole length. The entire surface of the bone is devoted, for extensive articulation above and below, for the attachment of very strong ligaments laterally, and for the insertion of tendons at its upper head. Posteriorly and superiorly it is covered by cartilage and synovial membrane, on which a sheath is formed, giving to this bone also the office of a pulley on which the long flexor tendon acts.

I must pass hastily from details on the structure of this most important bone to considerations of its functions. The structure of the bone has been well described by Bracy Clark and other authors, but its functions have not (so far as I have seen) been adequately understood or described by any author. An understanding of the functions the coronary bone is destined to perform in the economy of the foot and the movement of the horse, necessarily implies an advanced knowledge of the anatomy and physiology of the foot and limb. I regard this bone like a key-stone in the structure, the pivot on which others turn. It may seem out of place to attach so much more importance to one bone than to another, when all are essential, still it cannot be

denied that we have some bones occupying small spaces, the economy of which long escaped the special notice to which they had claim,—the astragalus and patella affording instances of this.

In attempting to describe some of the functions of the coronary bone, we must keep the structure before us; nothing but seeing it in all its phases, namely, stripped of its membranes, clothed and connected, can lead to any adequate understanding of its functions. First in importance to be observed is the extended articulating surface afforded by its lower extremity, the great provision for motion, turning, as it does, on the navicular and coffin-bones. We next notice two deep depressions, one on either side, and somewhat anteriorly, corresponding to two similar excavations in the coffin-bone; into these, short, powerful ligaments are imbedded, defining and limiting its office to a revolving and forward-propelling one. The property of other bones of the limb, namely, that of supporting weight, is admirably sustained in this one by the great power which its short, compact, and peculiar shape affords. It occupies a position in the centre of the foot, as viewed from any direction whilst the horse is standing, its lower articulation is deeply imbedded below the level of the upper margin of the hoof.

As has been said, the pyramidal process of the foot-bone prevents dislocation or overshooting of the coronary bone; that, however, is only one view, and a limited one, to take of the uses of that prominence; its base forms the principal point of bearing to which the superincumbent weight is transmitted constantly when in action. Posteriorly, the coronary bone reposes on the navicular, resting in a cup-like cavity, formed by the elevation of the navicular bone posteriorly, and its inclined direction forwards, where it meets the deeper slope backward of the coffin-bone.

The moving and supporting properties of this bone are, as we have said, most important in kind and considerable in extent, its action on the two bones below, as well as in its upper articulation, are that of a forward and backward motion, its strong attachment laterally affording no other motion than that defined by its structure and use. The joint formed by the three bones described constituting the coffin-joint, is strengthened and secured, alike for the performance of its office and against external injury, in a surprisingly beautiful way—its capsule and attaching ligaments are bounded laterally by cartilages, anteriorly by the broad insertion of the extensor tendon, and these all enclosed in an elastic hoof.

On the Positions assumed by the Feet of the Horse in Progression.

By James C. L. Carson, M.D., Coleraine, Ireland.

(To the Editor of the Edinburgh Veterinary Review.)

Sir,—Mr Joseph Gamgee, Professor in the New Veterinary College, Edinburgh, was kind enough to send me, a few days since, a printed copy of his "Notes on Lameness in the Horse." On reading it over, I found the following observations:—"Connected with the foregoing inquiry is the very important question of, How does the horse's foot come to the ground when in action? To Mr J. J. Lupton we are indebted not only for putting this question, but, after having done so, and been further encouraged by the conflicting answers he received, asserted, as his own belief, that it was the heel of the horse's foot, and not the toe, as heretofore taught in our schools, that first comes in contact with the ground. Mr Lupton published a paper on the subject in the *Veterinarian* of January, 1858, and, in my judgment, proved his case. Strange to say, that, important as that physiological question is, it has only been deemed worthy of notice by one individual besides Mr Lupton, and afterwards myself. In the *Veterinarian* for June, 1858," continues Mr Gamgee, "I expressed my views as agreeing with Mr Lupton's, and was then, as now, of opinion that an inquiry has been set on foot that must be pushed to its legitimate bearing, and that if it was difficult to see how the heel of the horse came first to the ground, it will be found still more difficult to conceive, and impossible to prove, the old doctrine of the toe coming first. Mr Lupton's paper for January, 1858, claims for that gentleman the precedence in bringing to the notice of the profession and the public this subject."

The moment I read the above, I knew Mr Gamgee was inadvertently in error in having given Mr Lupton the credit of being *the first* to bring this matter before the attention of the public, as I had put the same views in print in the columns of the *Londonderry Standard ten years before* Mr Lupton's paper appeared. In order that I might be in a position to prove this fact, I took the trouble of going to Derry this week, to search the volumes of the *Standard* which are kept by the editor for his own use. He was kind enough to grant me every facility in the search. I found that the number which was published on the 10th of March, 1848, contained my third letter on the horse. From it I now make the following extract:—"I think any person who takes the trouble of opening his eyes, may see that the safety of the horse's knees depends entirely on the slant of the shoulder and pastern, together with *a proper method of laying down the foot.* Here I am at variance with popular opinion, which says that a horse must *lift* his feet very high. Now, just imagine a man walking down one of the thoroughfares of London or Dublin, and lifting every foot half-way to his knee! He would certainly gain a great deal of admiration at the expense of his corns, and perhaps the

point of his nose. And what *great difference* is there between a *man* and a *horse*, that should make such a difference *in their mode of progression?* When will common sense become universal? I assert, most emphatically, that it is the laying down, and not the lifting, of the foot, which renders the animal safe. If he lays *the heel first to the ground*, he cannot fall. . . . Let the horse with the well-slanted shoulder and pastern throw his foot far forward, *and lay his heel first to the ground*, and I will answer for his safety."

It must be evident to all who read these extracts that I have anticipated Mr Lupton's views on this point by ten years, and therefore that I am called upon to place myself in a proper position regarding it before the veterinary profession through your pages. As I have never, to the present hour, seen Mr Lupton's paper, it is very probable he had not seen my letters at the time he wrote. We have both developed the same ideas; and the only difference is, that my letters were published ten years before his, and consequently that I have a right to the precedence. Indeed I never in my life entertained any other view of the horse's action than that he walked, *like a man*, from the heel to the toe.

The same views will be found at the 88th and 89th pages of my little book on *The Form of the Horse, as it lies open to the inspection of the Ordinary Observer*, which was published in 1859 as a reprint from the *Londonderry Standard* of 1848.—I am, Sir, yours truly,

JAMES C. L. CARSON, M.D.

COLERAINE, IRELAND,
July 12*th*, 1861.

Pelvic Abscess. By WM. M'KENNA, M.R.C.V.S., Belfast.

SOME time ago, a grey filly, three years old, nearly sixteen hands high, leggy and in low condition, but otherwise promising, the property of the late James M'Connell, Esq. of Glenburn, near Belfast, was brought to me for examination, and passed sound. She was afterwards put to plough, and continued apparently in health for a month. During the time it was excessively wet and cold, and she was daily exposed to its injurious influence; but whether the affection which I am about to relate was the effects of neglect, exposure to the vicissitudes of the season, or an injury, I cannot say, nor had I any means of discovering, as the man in charge of her could render me no information, or if he could, would not.

She arrived here late in the evening with the off hind leg swollen, and of which she was lame. The limb was well bathed with hot water, and she had an aperient, and was done up for the night; but by the morning the swelling was increased, and a glistening soft tumour was observed at the off-side of the anus, something of the appearance of melanosis. The pulse was tranquil, and she appeared

not to suffer much. I hesitated to open the tumour, as it receded from pressure, and appeared as if some portion of the intestines had escaped from their normal position. The swelling of the leg continued, and was now extending itself along the abdomen. She continued to feed well on hay, carrots, and bran. Fomentations were persevered in for a few days, but which appeared to have little or no effect—the dimension of the tumour was not changed, so far as I was able to judge from external appearance. I resolved to open it, as I felt convinced, after a minute examination, that it could be no part of the viscera, and yet it had not the character of an abscess, being soft, and receded when even slightly pressed. I first made a small opening carefully with a straight suture needle, and afterwards passed a fine silver probe. A little purulent matter appeared on the bulb of it. This encouraged me, when I applied the lancet, and made a good opening, and about two quarts of thick purulent matter freely escaped. The swelling of the limb increased, accompanied with much suffering. The bowels were opened, bandages were put on the leg, and fomentations applied every three hours. Some relief was obtained, but comparatively trifling, as the swelling continued, and, to add to this, another abscess formed on the opposite side of the anus. I made a large cut into it, and the quantity of matter which escaped was beyond calculation. She had a generous diet, and vegetable tonics were given morning and evening. Hot bathings and slow walking exercise were continued for some time, when an abscess appeared on the off-side of the sacrum, which was very painful, and at the same time the udder swelled to a great extent. I now concluded that I would lose my case, as every effort made to restore the filly was attended with some new disaster. The case certainly appeared to be hopeless, but even it must not be abandoned, as attention and perseverance will sometimes work wonders. On examining the mammæ, I found the swelling œdematous; punctures were made, and a considerable quantity of serum escaped; but the following day exhibited no improvement: the swelling was not abated, but if anything, increased. An aperient, combined with nit. potass., was administered, and which was attended with decided relief. The swelling along the region of the abdomen and mammæ was not reduced, and it is now palpable that an abscess was forming in the mammæ, as it was hard as horn. Pulse only forty-five, which to me appeared strange, taking into consideration so much tumefaction. In a few days a soft spot on the most depending part of the udder was discovered, but without fluctuation; indeed, the contrary was the case, for indentation was the consequence of pressure, giving some intimation of the contents of the swelling. Fomentations were had recourse to. Why not apply poultices? might naturally be asked. I will briefly reply by saying, in this case, impracticable, and for many reasons. A few days brought symptoms of a deep-seated abscess, and if an abscess, a question presented itself, which I have never been able to answer, Does it communicate with the fistulas at the anus? I opened

it extensively, when a large quantity of ichorous matter issued, after which the poor beast appeared more comfortable: the part was well bathed, and I re-examined it in a few hours to see if it had discharged well, but I felt satisfied that there still remained a portion imprisoned. I thrust a large lancet up the orifice already made, as far as I could reach, when out gushed at least three pints of thick healthy pus. The result delighted me; for never had I witnessed a poor animal so suddenly relieved from acute pain; her composure seemed complete, and she lay down for the first time since she was placed under my care—about five weeks. The swelling of the leg and abdomen rapidly subsided; she fed well, and could walk with considerable ease; but the udder kept up a continuous dropping of purulent matter. I flattered myself that her recovery was now certain, and that she would soon be able to be discharged.

But my fond hope was early dissipated, for in a few days things put on a more gloomy appearance. The abscess at the anus is again collecting, and swelling of the leg and thigh returned, accompanied with pain in the hip from the slightest pressure. I cast her, and opened the fistula down along the outer part of the labiæ pudenda, so that I could introduce my fingers, and made way for a copious discharge, but to my sorrow I found that a sinus had formed in every direction to the extent of *fourteen inches* into the pelvis. The orifice was well cleansed with lint, and injected with a sol. cupri sulph., and an extensive seton was passed down the thigh, from which there was considerable issue. The swelling and pain were abated in a few days, and the health greatly improved. All the time she was generously fed, and every attention paid to her otherwise. The injections were continued from time to time, but without any improvement in the character of the fistula, which put on an offensive smell, and was fast closing up externally. It was again opened, and injected with a sol. ch. calcis. This improved the odour. I commenced to dress with comp. tincture of myrrh for some time; but no improvement. I tried injections of sol. argent. nit., the effect of which was not perceptible. What shall I try next? was a question I frequently put to myself. She was cast again, and a large whalebone probe, armed with lint, well fastened on with thread, and saturated with a sat. sol. hyd. bi. chloride, which was withdrawn, and again and again introduced, working the probe in every admissible direction, in order to produce sloughing. I may mention that I took every care to prevent any of the caustic from coming in contact with the subjacent parts, by having them well sheathed with lard. White of eggs would have been better. But, notwithstanding, I had some trouble in consequence of the caustic drivelling down on the vulva, &c. &c. In some days afterwards I was enabled to remove a large quantity of dead cellular tissue, and which left a healthy-looking surface. The parts were dressed with ung. terebinth. A nice healthy discharge followed, and the orifice gradually closed, but some purulent matter continued to be emitted. Injections of the sol. sulph. zinc were applied, and

which produced the desired effect. The general health gradually returned, and all the diseased parts resumed their healthy state. She was discharged cured after being under treatment for fifty-four days, and remained in good health long afterwards, and had one or two foals before being disposed of.

I should add, that many gallons of purulent matter escaped during this protracted case.

Dyspnœa.—Death of a Colt from an Abscess pressing on the Trachea.
By W. A. Cartwright, M.R.C.V.S., Whitchurch, Salop.

On 15th Nov., 1848, I was called in to attend a three-year-old colt with catarrh, the property of Mr Thomas Whittingham of this town, timber merchant. The colt had, first of all, sore throat and a cough, and, soon after, great discharges from the nostrils. By a little alterative medicine, dieting, and nursing, he got apparently well, and all coughing ceased.

On the 5th Dec. of the same year, he was lent out to a surgeon to go a short journey, who, when he brought him home, said that he was rather thick-winded, and that he had not taken him off a walk.

8th.—He was "swapped" this day for another horse, and seemed very well, but was to be kept for the other person for a time.

9th.—This morning I was ordered to look at him. He seemed a little dull and heavy about the head, and makes a noise during respiration, and I fancied sore throat was again taking place. I could not detect any disease of the lungs, and his pulse was about natural. Gave a small dose of aloes, cal., and ant., and blistered his throat from his head to the breast, which took good effect.

10th.—On my first going to him this morning, I found his breathing was a little increased, but after being with him sometime he became excited, and his respiration got very laborious, and as bad as the worst broken-winded case I ever saw. On leaving him alone for awhile, his respiration would subside to its former frequency. Did not cough. Was warm and comfortable, and ate some hay. Has not been seen lying down lately. Gave him potas. iodid, cal., and ant., twice in the day. At night his respiration was very fair, and there was little alteration in him generally.

11th, 9 A.M.—His respiration was considerably quickened, something like a bad thick-winded horse—not like pneumonia or broken wind. I even now fancied there was only some abscess pressing upon the windpipe or about the larynx, and that when it burst all would be right again. Its exact site I could not tell, but, from the noise made in respiration, it seemed as if it was towards the larynx or nostrils. The latter were a good deal dilated at times. I gave him ℥j potas. iodid in some water, which he drank freely, and I left him, little thinking to hear of his death so soon.

10 A.M.—The groom was in the stable at this time, who said that the horse seemed uneasy and began to cough, that his breathing became much increased and laboured, and that he bit at the manger and rack, and soon after fell down and died instantly.

Post-mortem Examination.—Before skinning him I ordered the butcher to stick him, although he had been dead an hour or two. He accordingly plunged the knife between the ribs and the left shoulder, whence out issued blood and pus. After clearing the integuments from the trachea and about the breast, I came to the seat of the abscess, which had been about the size of a large fist, situate near to the first rib on the left side, and which must have completely pressed upon the trachea, as it was flattened by it considerably for at least six inches in length, and no doubt when he was alive the abscess must have obstructed respiration most materially. The larynx was highly inflamed, all other parts healthy. Saw no other abscess in any other part of the body.

Observations.—I think there cannot be a doubt in this case of the abscess being the cause of death, as his respiration had been impeded for several days, and he made a roaring noise as if something was pressing on the air passages, and which I fancied proceeded from about the nostrils, as they were much dilated when he was excited. The immediate cause of death, I am inclined to think, was from spasm of the muscles of the trachea, and those surrounding it, which abruptly terminated his existence much sooner than I expected.

Fungus Hæmatodes in the Upper Jaw of a Cow. By the Same.

ON the 12th January, 1847, I was sent for to Ightfield to see a cow, fourteen years old, the property of Mr Wiggan. I was given to understand that something was amiss with the upper jaw, and that she occasionally bled from the right nostril. On introducing my hand into the mouth, I found that there was a soft, spongy tumour, half the size of one's fist, growing on the outside of the upper right molar teeth, and also a similar one close up to these teeth on the roof of the mouth. On passing my finger along the teeth, I found that on the right side of the upper jaw the third molar tooth was gone, and where it had existed I could introduce my finger into the alveolar process and sinuses above, which contained a soft bloody substance similar to those on each side of the teeth. The two anterior molar teeth being small and loose, I removed them. The jaw about these parts was soft and diseased. The cow had been bought many months before, and was seen to discharge a little blood from the nostril above. Formerly she had fed pretty well, and kept herself in tolerable condition, but latterly she had got reduced in flesh. I ordered her to be sold, and, consequently, had not an opportunity of seeing her opened.

What brought it on? Was it in consequence of a decayed tooth, and the food getting into the opening? or had the parts sustained an injury? It is astonishing she had fed so well.

Glanders. By R. H. Dyer, Waterford.

(To the Editor of the Edinburgh Veterinary Review.)

Sir,—On perusing the *Review* yesterday, my attention was arrested at page 443, by M. Reboul's view with reference to that fearful disease, designated Glanders. I am willing to go the whole way with that gentleman in affirming that the difficulties of diagnosing glanders are sometimes frequent, and that ulceration of the schneiderian membrane is not to be always accepted as a positive proof of glanders being present. I have seen many instances of ulceration of the nostrils similar to what we find in the human subject. Sometimes with treatment, and as often without any treatment at all, the ulcers disappear, leaving behind *merely a trifling discharge.* The disappearance of the ulcers is no proof of the disease under notice having been *cured.*

Nor can M. Reboul assert with any amount of *certainty* that the animal to which reference is made by him, and confirmed by three other veterinary surgeons, that it was or was not a glandered one—at least he has not laid evidence before us to lead us to make such an inference: he merely (if I understand the English of it) asserts that the horse had ulcers in the nose; that a discharge was generally present for two years; that his patient underwent a certain treatment; that the ulcers were healed, but *the discharge continued;* and, lastly, that M. Reboul was confirmed in his opinion that the horse was not glandered, and that three veterinary surgeons acquiesced in it.

Now, Mr Editor, permit me to ask simply, *Where* lies the *proof* that the animal in question was not suffering from glanders? I have read and re-read the article of M. Reboul, but without being able to discern the true state of things. Doubtless M. Reboul and his three *confrères* are aware that glanders exist *without* ulceration; and I have no doubt they are also aware that ulceration may be stayed, and the *trifling* discharge remaining after the *apparent* cure, will most certainly produce farcy and glanders in as many animals as they choose to inoculate with the discharge. It does not appear that any trouble was taken to ascertain for *certain* whether the disease *was* glanders or not. I cannot learn that M. Reboul or his friends tried any experiment upon an animal with the view of ascertaining the *true* position of the case, but merely ventured an *opinion* as to the nature of it. If all the veterinary surgeons in France had examined the case, as we are led to believe it *was* examined, they would very likely have pronounced the animal free from glanders.

If M. Reboul will do me the favour to read at page 380, vol. xxx., fourth series of the *Veterinarian*, 1857, he will there have an opportunity of judging how these trifling discharges are capable of producing disease. To save him and others the trouble of searching, I will take the liberty of transcribing a part of the history, as related by myself at the time alluded to. I think all persons, whether members of the profession, or laymen, should be made acquainted with such a case:—

"A brown pony arrived from England, suffering with catarrhal symptoms, which were accompanied with tumefaction of the salivary glands. He only partially recovered, as a nasal gleet was the sequel. The animal not being of much value, very little notice was taken of him.

"A bay gelding, well-bred, and in good condition, the property of the same gentleman, was attacked with what was supposed to be strangles. In a few days I found the nasal membrane full of ulcers, and all other symptoms confirmed my opinion as to the disease being glanders. My advice to the owner was to have the horse destroyed immediately, and to take steps to prevent the malady spreading. All my instructions were carried into effect with promptitude. The horse *was* destroyed, and examined afterwards. A worse case I never beheld. The whole of the schneiderian membrane was diseased, as well as the sinuses, both frontal and maxillary. Afterwards enquiries were naturally made as to the origin of the disease; I at once pointed to the pony, as the only solution to the question.

"The symptoms of the pony were certainly not such as to warrant me in stating that he was glandered; but, at the same time, I considered it a suspicious case.

"I considered the propriety, and indeed the necessity of *inoculating* an ass with some of the matter taken from the pony. A young two-year-old healthy ass was purchased and operated upon. The ears and nose were the parts rubbed with the suspected matter. This was on the 6th of March, 1855. The ass was placed in a loose box, and fed liberally with oats, carrots, bran, and hay.

"On the 12th of the same month I called to see him, and found both farcy and glanders present. From this date to the 19th, he grew rapidly worse, when he died,—this being thirteen days from the date of the inoculation to the time of death. I examined the ass after death, and the post-mortem appearances in the nostrils and head were similar to those of the bay horse before spoken of. The affair to me seemed as clear as possible, and I advised that the pony in question should be despatched without delay. The owner not liking to have him destroyed, presented him to a man in the country, who is famed for his knowledge of the healing art in general, but more especially the veterinary art. This 'knowing one' patched him up, said he was cured, and sold him to a butter merchant on the quay, where he was employed drawing a float to the steamers, the owner not believing the pony was in any way diseased, except that

of having SOMETIMES a running at the nose, which was considered '*nothing*.' Both the second and third possessor were aware of the experiment which had been made with the ass. They would not believe that the pony, which was in such fair condition, did his work well, and all that, could be the means of infecting any animal. In order, I suppose, to test my sincerity, the butterman on the quay sent the pony to my establishment to get him shod. When I found the pony was in the forge, I desired he should be taken away, and never be brought upon the premises again. Some people on the quay complained that a glandered pony was allowed to mingle with other horses. No notice was taken of this, as the officials do not appear to have any instruction in such cases, and to set everything at rest, the butter merchant took the pony to a veterinarian, who gave a *written certificate to the effect that the pony was not glandered.*" The above is the extract alluded to, and, as far as it goes, it, I think, fully carrys out the views I hold with reference to glanders; but the picture is incomplete, as "time" had not sufficiently matured the case. I have said the pony had the power of producing both glanders and farcy, by means of the matter, as I designated it; but this term must be accepted in a *broad* sense, not what is generally intended to be conveyed, viz., pus; it had not the characteristic of pus, but of *mucus* merely. But to proceed. A few months after this article was sent to the *Veterinarian*, I learned the butter merchant was in trouble. I called to ascertain the particulars. He informed me that a horse which had stood by the side of *the pony* had caught a violent cold, *and was destroyed;* that he had given away the pony to some old man, who made his living by collecting manure upon the roads in the country. More than this he did not choose to tell. The "knowing one" (previously referred to), told me of the death of one of his horses. His story was similar to the other—the horse caught a cold, and was exposed to rain, and got so bad with running at the nose, &c., he had him destroyed. I think these cases may be considered satisfactory, and full of practical information. I gave demonstrative proof that the discharge spoken so lightly of in the pony, contained in it the germ of farcy and glanders. *This is a great fact.* I have ventured an *opinion* that the other two animals were infected by the pony.

M. Reboul, on the other side, has given but an *in*complete and unsatisfactory account of his patient. Veterinarians cannot be too particular in their examinations of horses when labouring under diseases of the air passages. Fortune has highly favoured me in this country with the sight of a great many cases of glanders, but very few of true farcy. Sometimes I have fallen into much trouble by my *verdict* in such and similar cases, but "Old Time" has invariably put things straight. Apologising for so lengthy an article, I remain,

Yours, &c. R. H. DYER.

Protection from Quacks. By a Retired M.R.C.V.S.

(To the Editor of the Edinburgh Veterinary Review.)

Sir,—In the leader devoted to this subject in your last issue, a policy is sketched out, the wisdom and expediency of which are not quite clear to me. Were the question you have raised put to the vote at a *really* general meeting of the Royal College of Veterinary Surgeons, I should be prepared to find myself in a very small minority; for I am very well aware that you must be regarded, not so much as the originator of the rallying-cry, "Protection from Quacks," as the echo of a sentiment long and loudly expressed by a very considerable number of my brethren. So little do I presume to hope that I can succeed in demolishing what many regard as the first article of the professional faith, but what, respectfully, I must be permitted to designate the stock professional bugbear and the quintessence of professional prejudice, that, but for the invitation to free discussion with which your leader concludes, I should not allow myself to break the rule which I have scrupulously observed since I retired from the active duties of the profession, to look on and listen, but not to interfere.

"Let us avail ourselves," you exhort, "of our present charter, and any means to secure to us the good it was intended to confer; and then vigorously set to work to inspire those in authority with a just sense of the wrongs from which we unquestionably suffer, and obtain for the veterinary surgeons of the United Kingdom protection to the extent enjoyed by our medical neighbours."

The envied boon is "protection to the extent enjoyed by our medical neighbours." Supposing it were attainable with tolerable facility, what is such protection worth? Have not the reports of the Courts, since the famous medical Act became law in 1859, afforded numerous illustrations of the difficulty of punishing ignorant pretenders, notwithstanding the restrictive and penal clauses of the said bill? Many convictions have been obtained, it is true, but at what cost, on what conditions? The medical council has decided that it does not consider it part of its duty to prosecute the offenders against the very act to which it owes existence, and the onus is thrown on the medical practitioners of the kingdom, who have organised themselves into trade protection societies, so-called registration associations. By this mechanism, a certain number of the more barefaced and clumsy advertising scoundrels have been arrested in their career of progress; but how many hundreds have defied the law successfully, by the most transparent subterfuges! What I maintain is, that the "nervous disease" secrecy-men, the herbalists, and the bone-setters are of less danger to society than the qualified men, who, under the protection of degrees and diplomas, sometimes of the highest, practise with impunity homœopathy, and sundry other impostures. Where men of the former class snatch pence, the latter filch guineas from

the public ; whereas, again, the latter insult the dignity of the medical body to which they legally belong, and from which they cannot be excluded—the former no more affect the dignity of the medical profession than pickpockets and burglars do the honour of the commercial community. As a member of the veterinary profession, I do not envy the protection privileges of the sister body, and that simply because they are of no real practical use.

I may be wrong, and still I dissent from the propriety of petitioning the Legislature for the protection in question, and my reason admits of statement in a very few words :—I never like to ask for that which I am certain beforehand will not be granted.

I have more than once, Sir, read in the pages of your *Review* of the very small number of duly-qualified veterinary surgeons throughout the British Empire, not only relatively to its enormous agricultural wealth, and particularly its riches in domesticated animals, but even comparatively to some of the poorest countries in Europe. Is it likely the Legislature would accord exclusive privileges in the performance of a great public duty to a body of men notoriously, nay, in the shewing of its own official register, altogether unequal to the discharge of that duty, from the smallness of its numbers, if for no other reason? Unfortunately another, and if possible a better, reason exists. Is the average intelligence, learning, and practical ability of the members of the Royal College of Veterinary Surgeons, such as to entitle them to anything like a monopoly in the treatment of domestic animals? Is *every* freshman of the Royal College so competent to treat cases of hove and pleuro-pneumonia, influenza, and lameness, that he deserves to be invested with the power of establishing himself in practice next door to *every* farrier and cow-leech in the kingdom, and to cause him to be fined or imprisoned if he dare continue to practise as "William Scroggins, Veterinary Surgeon," without the authority of the corporate seal, pursuant to the charter of 1844?

My position, then, is twofold. If we could obtain the protection sought, it would do us no good; and secondly, our professional status is not such that we have any right to petition the Legislature for exclusive privileges.

The charter of '44 is a grand instrument. All that has been said in laudation of it falls short of my estimation of what must one day prove to be its real value. The battle you victoriously waged under its banner for the freedom of veterinary education, will one day be memorable in our annals as the first struggle for intellectual freedom waged in behalf of our brotherhood by a small handful of its members, against a compact league of prejudiced money-grubbers, too long inured to the dull pleasures of idleness to relish the refreshing life of vigorous activity in the pursuit of noble objects. But it would be a calumny to assert that for the final attainment of the great objects for which the charter was framed, it is necessary to have recourse to pains and penalties.

I believe no really intelligent, practical, and hard-working member of the profession is, on the whole, a loser by the existence of ignorant impostors. What is wanted to secure the dignity of the profession, is the adoption of such means as shall only admit, within its pale, men calculated to do it honour. The necessary power is possessed by the Council of the Royal College of Veterinary Surgeons, on whom devolves the duty of determining, by examination, of the fitness of candidates for admission. At first sight the power of examination does not appear to be of great efficiency in the promotion of the object in view; I, on the contrary, regard it as an all but omnipotent privilege, if *rightly* used. Practically the Agricultural Societies throughout the kingdom, the Royal Societies of London, Edinburgh, and Dublin, the Universities, the Royal Societies of Arts, and Mechanics' Institutes, rely for the attainments of their objects—the promotion of excellence in various departments of learning and industry—on the working of the competitive system, and on the known truth that in proportion as the standard is raised for admission to a certain privilege, so will those desirous of enjoying it make increased efforts to attain it.

I am very much inclined to think the Royal College of Veterinary Surgeons delegate the duties of examining, to bodies of gentlemen in London and Edinburgh, without special instructions, without appointing a standard, and without any inquiry into the nature and extent, of the qualifications of the candidates. The ordeal is gone through, a certain large number pass, the minority are rejected, and I doubt whether the Council know any more about the matter than does the public out of doors. Now if the Council will look at the matter, I am satisfied it will be found in our art, as in other bodies, that on raising the standard greater efforts will be made to attain it by the individual competitors, and by their trainers—the schools. There might be a little grumbling at first, but, depend upon it, competition would work its marvels—stupid men would sharpen their wits, and, by work, grow less stupid, while clever ones would be stimulated to add to their store. The average would be raised, downright fools excluded, and able men encouraged to labour for distinction. This is what I understand as the right method for promoting professional dignity and gaining the public esteem. I am not for trying to impress those in authority with a sense of our corporate wrongs, for I know that those in authority always lend a deaf ear to grumblers, particularly when members of corporations, and as such having the power of remedy, for the most part, in their own hands. I am a thorough-going free-trader, and I know that smugglers were the spoiled children of protective duties. Granting that the fruits of free-trade and competition in learning are slow in attaining maturity, the harvest is none the less certain. Of one thing I am very well satisfied: that if we cannot as a body rise in the social scale, and strive to win the public confidence by our own exertions, and in virtue of our own merit, all

the pains and penalties imaginable would fail in doing it for us; therefore I do not seek them, but on the contrary, as inglorious reminiscences of a by-gone age, I look upon them with contempt. Insensibly I find, on reperusing this communication, I have touched on two very wide and difficult subjects—examinations as a test of competency, and the competition system as a stimulus to professional progress. I shall, with your permission, revert to them more fully next month.—I am, &c.,

A Retired M.R.C.V.S.

Myositis: A Letter addressed to Professor Gamgee, *Principal of the New Veterinary College.* By William Keith, V.S., St. Fergus.

Sir,—Having taken up a volume of the *Veterinary Review,* I was very much interested by reading one of your clinical lectures, upon a subject that, as far as I am aware, has received very indifferent, or, at least, little of the investigation necessary to fully demonstrate the true nature of this disease, viz., myositis. After carefully perusing your lecture in the *Review,* where you so fully describe the above disease, its symptoms, and the causes most likely to produce it, the following case, that came under my own observation, will entirely coincide with the above, as the same disease described by you. I was sent for in great haste to go and see a work-steer, that the owner fancied was going to die of quarter-ill. The symptoms were—dulness; loss of appetite; full pulse; unwillingness to move; voiding urine tinged with blood. The gluteal muscles swelled to a great extent, and seemed very painful when touched, or moving the hind-legs; none of the other muscles were swelled. I had the animal bled, and gave a dose of Epsom salts, and applied warm fomentations to the swelling, and kept on warm cloths along the sacral and lumbar regions. In a few hours the animal seemed much better, and commenced to eat; and next morning, when I saw him, he was much improved, and the gluteal muscles much softer, and less painful. The medicine had operated, and I told the owner that he would soon be well again, and to give him gentle exercise daily for some time. He is now quite well, and at work. The cause of the disease had been over-exertion. Being bad weather for a long time previous, the ox had been kept in the house without exercise, and the first day he was taken out to work he had danced about and was very wild, but before two hours he had to be taken home, scarcely able to walk at all. I may mention that my brother had a case similar to the above, and under the same circumstances, and at the same time. He applied the same treatment, except bleeding; the animal got well in a few days. These are the only cases that have come under my notice in practice; but I expect to meet with many more ere long, as I do not think that the disease is so very

uncommon as to be seldom met with. If you think the above worth your perusal and attention, or a place in the *Review*, I have some other important cases on hand that might be of interest to veterinary readers.—Yours, &c.,

WILLIAM KEITH, V.S.

A Non-Professional View of the Leeds Show. By IGNORAMUS.

"Is not this a strictly professional journal?" I think I hear some of the studious and practical readers of the *Review* ask, in alarm at the audacity of the title of this article. Most assuredly it is, my most esteemed and scientifically precise friends—a journal founded to report the most interesting cases falling under the cognisance of veterinary practitioners, and to afford information as to the safest and best modes of treatment. "And why on earth, then, are you who, to judge from this heading, know little more about a horse or a cow than that they are animals with four legs, allowed to prate to us here concerning the greatest agricultural display that our country has ever witnessed?" is very probably the next query of our fact-seeking perusers. Simply, I answer, because it is good for you to get out of the technicalities and the special jargons (I mean no offence) of professions, occasionally, to forget about such particulars as roaring, and spavin, and broken-wind, and simply to look at an animal as it presents itself to the eye of one of the great unlearned in the mysteries of horse-flesh, and who possesses not the talisman of "touch" as regards bulls or cows. Do you imagine that the philosophy of Hamlet is marred by the silliness of the courtiers, or the sublime grimness of Othello by the nonsense of Roderigo? Are not both dramas considerably improved by the introduction of such characters? So in like manner will the effect of the *Edinburgh Veterinary Review* be heightened by the insertion of my unprofessional flippancy, which, if it serve no other purpose, will at least give you reason for thanking your stars that the tuition at the New Veterinary College has raised you so far above the dense ignorance as to the nature and quality of our domestic animals, in which the great mass of even ordinary intelligent people are content to remain. The prologue is ended.

I went to the Leeds Show, simply because all the world and her husband in my quarter thought it the proper thing to do. With them I arrived at the entrance-gate on Thursday, paid my shilling, the turn-stile turned round on its hinges, and I stood in the presence of a score of hissing engines and hundreds of whirring wheels, designed, I was told, to supersede an immense number of horses. First there was a huge machine called by its maker a "modle," the object of which was to tear through the ground at an unparalleled rate, and turn up the soil to a depth hitherto unapproached—the result, of course, being heavier and better crops. Beside it clattered straw-

cutters, thrashing-machines, bone-grinding machines—(no fear of Alexander's dust bunging a beer-barrel now-a-days: it would be sifted in one of these mills and spread over the soil, making two blades of grass grow where only one appeared before)—oil-cake grinders, noiselessly reducing the brown square pieces to powder, atmospheric hammers coming down with thud, thud incessantly, until the drums of one's ears were well-nigh cracked; washing-machines with indefatigable touters, explaining to everybody at once the eccentricity or novelty of the motions of each; beautiful steam-driving coaches, which I should as little care to meet on the public road, as I should care to drive them; brick-making machines turning out thousands of splendid bricks per hour out of material that would certainly have astonished the Israelites, and made them complain a little more bitterly of Pharaoh than they did, had he requested them to produce bricks out of it; steam-ploughing apparatuses of various kinds—the source of much difficulty to the implement judges, I understood, and the occasion of not a little ill-feeling on the part of respective makers; straw elevators, force-pumps, and neat garden summer-houses. Having got confused among the multifariousness of the articles described as "machinery in motion," it was but right that I should go and get "worse confounded" among the implement sheds, extending, as the clerk of the works affirmed, over nearly two miles of ground. I looked at Howard's ploughs, expressed my high approval of them, which I, of course, not knowing anything about them, could do without the slightest bias, directed a wise glance at his horse-rakes, and then passed on among a host of carts and waggons and reaping-machines, horse-boxes and sowing-machines, lawn-mowers, and wire fencing, and entrance-gates for lodges, cattle food and condiments, cradles and patent mouse-traps, eel-traps and boot-cleaning implements, and hundreds of other things, whose names, in the catalogue, conveyed no meaning to me, and finally brought up in front of a bitter-beer establishment on the ground, the merits of which I perfectly appreciated.

Having refreshed myself here, I directed my attention to the live stock. I should have gone there first, but the world and her husband (I insist on the phrase, instead of the world and his wife, the world being feminine, as I hold it) said it was proper to do the thing systematically, begin at the beginning and go right through; and I have great respect for the opinion of that worthy couple. Round the winner in this class there was a great crowd of people, looking, or trying to look, if I may use a slang term, as "horsey" as possible. "Aint he a lovely creetur," said a respectable green-grocer-looking individual; "he has a heye like a hangel." "Aye, he is a nice un," said another equally well qualified to judge, "he has a skin as smooth as yawr Sal's Sunday cloak." After much pushing and squeezing, and I am afraid to confess how many muttered imprecations, I at last got within good view of this £100 prize-taker. His colour was chestnut, his sides deep and flat, his head was a fine shape, but it drooped, and his eye

was of a mild nincompoopish appearance, indicating an equine Barnaby Bibbs spirit, before that dramatic worthy "flared up." Not my fancy decidedly, and so I pass from Nutbourne to John Barleycorn—the second prize—a jolly-looking animal, who held up his head like an honest beast. That dignity which belongs to honesty beamed in his eye, in which also there were indications of resolution, fire, and gentleness. He could curve his bay neck with all the gracefulness of a belle swan, while his deep chest, lithe round body, and beautiful hind-quarters, seemed in the eye of a non-professional to give evidence of almost all that was perfect in action and strong in endurance. That's the horse for my money if I were a breeder, and the placing him second to Nutbourne can only, I think, be accounted for on the ground that the judges were teetotallers, and objected to give an animal with so beery a name the first prize.

And now for Lord Fauconberg, a splendid bay, which was highly commended. Upon my word, on seeing him, I begin to hesitate whether even John Barleycorn should have had the premier position. What a nobility there is about the head of this animal—what beauty and strength in his round full chest, and his limber but not over-slim legs! How proudly he arches his neck—what willingness there is in his eye—what capacity in the loins! And to be only "highly commended," while that lackadaisacal chestnut has carried off the first prize! It is monstrous to me, a unit of the great unskilled, and I readily believe what a groom (not Lord Fauconberg's) tells me, that the judges and Mr Groves, the owner of Fauconberg, are not on very good terms, and that if his horse had been the first in all England he should not have got the prize.

I look at other horses in this class, some of whom have progenitors of great repute; but the two I have described are my favourites, and I shan't do them the injustice even to mention any other names in their presence.

There were some of what I regarded as very fine blood mares and some capital hunters, well adapted to carry "heavy weight," I heard people say, "splendid at five-bar gates," and so on. In horses, for common agricultural purposes, there was a fair number entered, and the judges, I noticed, had awarded the prizes to several which were exactly to my liking—the best horses of their class decidedly from the ignoramus stand-point.

I proceed now to the short-horns, a magnificent show, no less than thirty-eight bulls not exceeding six years of age being entered. One, however, of the famous butterfly breed, did not make its appearance, and its owner, Colonel Townley, was also a defaulter in several other classes. Various reasons I heard alleged for the absence of this distinguished breeder; one, the most feasible perhaps, that the names of the judges had come to the Colonel's ears before he had sent off his cattle, and not having much faith in their ability for the duties they had undertaken, he preferred to pay forfeit rather than submit to their judgment. Another cause assigned was, that the

Colonel, fearing that he could not win, where there was so much excellence, resolved that he should not be beaten, and so kept his animals at home. Very unlikely, I should think. The bulls were tremendous animals, and the most admired ones so fat that, for my part, I should doubt very much whether they were not much better qualified for the butcher than to increase the race bovine. I don't know what makes the judges almost always fix upon the fattest animals as the ones best worthy of a prize. Are there not features of beauty about cattle—distinctive points, as about human beings? No doubt of it, do you answer, my professor? Well, why should prizes go to beasts whose one great merit is that they are so obese that all other merits, if there be any, and defects likewise, are hidden. Nobody thinks the fat woman of the show the handsomest creature in the world, and why should they fall in ecstasies over a monstrously over-fed bullock?

I am not going to enter into a statement about the different breeds, but they all, I noticed, had a tendency to over-fatness. As to the pigs, most of them were simply disgusting. In some, the small eyes were utterly lost in rolls of fat, and the necks bulged out as if all the wretched animals had been affected with gôitre. The majority of them seemed unfit to live through sheer obesity, and quite unworthy to die, so far as use for human food is concerned. I should imagine them to be about as palatable eating as whale-blubber.

The sheep were a large and excellent show, and attracted much attention from the great unlearned. Taking the cue from one or two butchers, everybody was feeling them, and looking knowing, and I did likewise. "Ain't he too narrow about the hind-quarter?" said a comfortable banker-looking individual, wishful to be thought a little agricultural, as I was feeling with sage-like visage a fine Shropshire. "Oh, no," said I briskly, and with an air of great practical knowledge "that's the peculiarity of the breed." "Oh, indeed," he replied, "I was not aware of that before." No more was I, nor am I yet, I thought to myself, but I did not lessen the gentleman's reverence for me by blurting it out. Nor will I further trespass on the practical reader's patience by saying another ignorant word about the Leeds Show.

REPRINT OF REMARKABLE MEMOIRS.

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SINCE we reproduced, for the benefit of veterinarians, papers scattered over periodicals which are not easily obtained, and which, though of much value, are, to a great extent, unknown to the profession, the advantages of the system have been recognised by many of our subscribers. We now give the first section of the best essays on variolæ vaccinæ. Dr Ceely's eminent memoirs appeared in the "Transactions of the Provincial Medical and Surgical Association," which are rarely seen even by medical men. So well adapted are these Memoirs to the pages of the *Annals of Comparative Pathology* that we only have to draw the attention of our readers specially to them.

Observations on the Variolæ Vaccinæ, as they occasionally appear in the Vale of Aylesbury, with an Account of some recent Experiments in the Vaccination, Retro-Vaccination, and Variolation of Cows. By ROBERT CEELY, Esq., Surgeon to the Buckinghamshire Infirmary.

Que chacun dise ce qu'il sait, tout ce qu'il sait, et rien ce qu'il sait.—MONTAIGNE.

ARDENTLY admiring the genius and philanthropy of Jenner, and entertaining a corresponding estimation of the value of the discovery which has rendered his name illustrious, and constituted him one of the greatest benefactors of the human race, I nevertheless could not divest myself of sundry doubts on certain points of extreme interest and very great importance connected with the natural history of the vaccine, and the theory and practice of vaccination. These doubts were not of easy solution. They required for this purpose not only time, but a concurrence of circumstances which I could scarcely hope to witness. Actuated, however, by the simple desire of observing, for my own personal satisfaction, the evidence upon which many of his fundamental conclusions were based, I sought, at an early period of my residence in this neighbourhood, to avail myself of those opportunities which the occasional occurrence of the natural and casual variolæ vaccinæ, and the existence of an ample field for vaccination, (if zealously cultivated), seemed capable of affording.

The events which have occurred, and the discussions which have arisen during that period, have greatly enhanced the interest, and materially augmented the necessity of such an inquiry. The active and judicious steps taken by this Association prompted a more energetic and diligent pursuit; while the direct application of Mr Dodd, one of the Secretaries of the Vaccination Section, on its first formation, for my humble co-operation in the investigation of the eruptive diseases of cows connected with vaccination and small-pox,

furnished an additional motive which I felt it both impossible and improper to resist. His "Queries and Suggestions on observing the Vaccine," full of point and utility, have not been forgotten nor neglected during an active investigation of that and other contemporary and subsequent eruptive diseases which have prevailed in several dairies, during the last eighteen months, in the Vale of Aylesbury. The "Queries and Suggestions" of the same gentleman relative to my intended experiments, induced me no longer to postpone the commencement of a series which I had long contemplated, and which nothing but an inability to procure suitable subjects had prevented me attempting during a previous variolous epidemic. The facts and arguments adduced and urged by the highly interesting work,[1] constrained me to persist in a course of experiments which my own observations had already taught me were difficult and troublesome of execution, and precarious in result. Biassed by no theory, but impelled by an earnest and anxious desire to discover truth, these observations and experiments were made and conducted amidst the fatigues and demands of active rural practice, and, though few and limited, under difficulties and sacrifices which it would be useless to enumerate or describe. To those who are practically acquainted with the subject, any detail of them would be superfluous; to others, a lengthened recital would be excessively tedious, if not altogether unprofitable. The manifold inherent and contingent difficulties to be subdued might well deter individual efforts, and defy private resources; but an untiring interest has continued to urge, when other considerations ought perhaps to have restrained. The results of my humble but strenuous efforts, if they have no other effect than the corroboration and confirmation of the opinions and observations of others, will not, I trust, on so important and disputed a subject, be altogether without interest, or inappropriately placed in the *Transactions* of a Provincial Medical Association belonging to the country of Jenner, where, greatly to our discredit, less has been accomplished (if I am correctly informed), in some interesting branches of this comprehensive subject, than has been effected elsewhere.

In the hope and with the expectation that our provincial brethren, at least, will see what is due to themselves, to the Association, and to the profession, (if other considerations could be disregarded)—that they will cultivate opportunities peculiarly their own, which more frequently occur than probably they are aware, I venture to offer the following hasty and imperfect sketch of still more imperfect labours. A subject which needed and obtained so much of the time and talents of Jenner, may, indeed, even for some of its less investigated parts, require the united and continued exertions of many. My own observations and researches, though commenced in scepticism, I have anxiously endeavoured to prosecute with all possible care and candour; and while I desire not to be considered as having pointed the way

[1] *Life and Correspondence of Dr Jenner*, 2 vols. by Dr Baron.

through a most intricate path, of which, in truth, I have but barely seen the entrance, it will be gratifying to me if a faithful record of them should arouse the enterprise or facilitate the progress of abler and more successful adventurers.—*Est quòdam prodire tenus, si non datur ultrà.*

TOPOGRAPHY.

The Vale of Aylesbury, which in natural fertility is considered scarcely inferior to Pevensey Level, or Romney Marsh, though for the most part composed of rich clays and loams, comprises within its limits most of the soils, variously intermingled, by which the county is characterised, viz., rich loams, strong clay, chalky mould and loam upon gravel, in considerable variety. It extends from Thame in Oxfordshire on the south-west, to Leighton in Bedfordshire on the north-east, a distance of more than twenty miles. It is bounded on the south by a range of heights called the Chiltern Hills, which stretches across the southern extremity of Bedfordshire to the southern part of Oxfordshire, being part of the great chain of chalk hills extending from Norfolk south-westward into Dorsetshire. On the west, at a distance of ten and twelve miles from the town of Aylesbury, which is situated nearly in the centre of the Vale, on a gentle eminence, it is bounded by a range of hills of the upper oolitic formation, constituting part of the chain which extends with interrupted continuity through Oxfordshire, Berkshire, and Wiltshire. The surface of the north and north-east border of the Vale, at a distance of six or seven miles, is diversified by a cluster of gradually rising and insulated hills of nearly similar structure, taking the opposite direction, and blending in the distant prospect with the hills of Hertfordshire and the Chilterns. The Chiltern Hills consist of clay, upon chalk, of different qualities, with occasional beds of gravel and sand, and, in many places, an abundance of brick earth. The surface soil of the valleys between the hills consists of rich clays and clayey loam, which, upon the declivities, are in some places very thin, and form a clayey chalk; on some of the hills the surface is clayey, and on others it is composed in a great measure of chalk.

The highest of the insulated hills on the west and north-west verge of the Vale, and on which is situated the town of Brill, has, near the surface, broken strata of brick earth, limestone, grit, red sand, ochre, and rubble, a firmly consolidated bed of oyster shells, and, amongst the iron sand, large nodules of bright yellow, interspersed with lumps of pure white, in various forms, but chiefly cylindrical; these all rest on a basis of clay of unexplored depth, the ochrous beds being interspersed between the other strata in thin layers, imparting their colour and quality to the neighbouring springs. Purbeck, Portland, or Aylesbury limestone, and Kimmeridge clay rise from the river Thame on the south-west, and culminate on Brill Hill with a thin covering of iron sand, this being probably the highest point of these formations in England.

Fossils in great abundance are found here, furnishing a rich harvest for the collector. Large fossil wood, crustaceæ, and many vertebræ and bones of saurian reptiles; oysters and muscles, beautifully preserved; Ammonites giganteus, nearly two feet in diameter, and several other species; Trigonia clavellata, costata, nodosa; Pholadomya acuté-costata, æqualis; Pecten; Helix obtusa; a species of Teredo; Trochus; Venus, two or three species; clams of Astacus, Ostrea, &c. &c.

The lower grounds consist of deep tenacious clay, intermixed with shells, loam, and sand, of various colours.

The highest of the north and north-east cluster of hills at Quainton, is seven hundred and eighty-six feet above the level of the sea. The order of the strata near the summit to the depth of fifty-four feet is as follows:—Vegetable earth, gravelly small stones, ochrous (yellow) earth, white (like pipe) clay, sandy loam, with red, white, and blue sand, in small veins, under which are iron stone, fusible in a strong heat; loamy sand, beneath which is a thin layer of (sometimes interspersed) blue clay, resembling impure coal in colour, scarcely more than a foot thick; grey dirt and loam; hard blue solid stone; grey loamy sand and dirt, with a sub-stratum of Pendril stone, formed like bricks; stone called building stone, in masses often exceeding two tons; limestone; brown or yellow sand; rubble stone, containing ammonites, ostrea, small screws, and other fossils; brown sand; and stone of a dark green colour, called bottom stone, not very hard. At the foot of the hills, on a basin of blue clay, prevalent throughout the Vale of Aylesbury, are strata of coarse sand of divers colours, hard grit stone, various loams, but little if any intermixture of water-worn pebbles. Fossils abound here: bivalves, ammonites, from the smallest to nearly two feet in diameter, with four or five volutes; belemnites in the sand and ploughed up from the clay, with sea shells in good preservation; and selenites in the clay to the north of the village, at the foot of the hills near the water courses.

The Thame, with many tributary streams, having their origin in the neighbouring hills, abundantly waters the Vale, which, in wet seasons, in many parts, is subject to copious and extensive inundations. Under draining has of late years been pretty generally and from necessity practised, and with manifest advantage.

ENDEMICS.

Here bronchocele has been from time immemorial an endemic. It is found in all parts of the Vale, but more particularly on or near the hills. It is chiefly observed in females, especially those with fair complexions and lax flabby fibres; occasionally in males under similar circumstances. It is often hereditary; not unfrequently of an enormous size;[1] and occasionally congenital, occurring in several successive

[1] Although enlargement of the thyroid gland here seems in most instances to depend on the deposition of a glairy albuminous fluid in its cellular structure, yet now and then it appears to be composed of a compact and solid aggregation of calcareous particles, presenting to the touch a strong hardness

births. It is remarkable, however, that when congenital it always spontaneously subsides within the first six months of infancy. The encysted form is very rare. Struma in all its varied forms and wretched complications is unhappily the lot of numbers of the ill-fed, indifferently clad, and badly lodged peasantry. Dyspepsia and neurotic disorders abound.

EPIDEMICS.

Fevers of the intermittent, remittent, and continued type, dysenteric and acute gastro-intestinal affections, are annually epidemic, one or other prevailing according to the season of the year and existing constitution of the atmosphere. They are often found sometimes co-existent in the same village and in the same family, and not unfrequently inter-current in the same individual. In the remittent and continued (or continuous remittent) types, if of any duration or intensity, the intestinal mucous follicles are invariably implicated. Originating palpably in malaria, it is nevertheless equally clear that they are under the contingent influence of contagion.[1]

Like most of this central part of the county, from the Chiltern Hills northward to the Watling Street, the greater part of the Vale of Aylesbury is devoted to grazing and the dairy. An immense number of sheep, cows, and oxen are kept on these extensive pastures. The dairy farms are in general large, and in number and extent greatly predominate. The cows and grazing stock are for the most part bought in. The shorthorned Yorkshire breed of cows is used principally for the dairy; Hereford, Devon, and Welch for grazing.

EPIZOOTICS AND ENZOOTICS.

In common with many other parts of the kingdom, this neighbourhood suffered much from contagious epizootic which prevailed so fatally among horned cattle from the years 1745 to 1780. The places of interment of many of its victims are yet pointed out, and the dismal tales of its ravages are remembered by many with whom I have conversed.

In wet seasons the sheep suffer extensively with the "Liver Rot," a disease which at the same time assails hares and rabbits.

Lately the disease which has for the last twelve months prevailed so extensively on the Continent, the aphtha epizootica,[2] has appeared

[1] In the observation of the rise, progress, variation, and decline of these kindred epidemics, it is impossible to forget the graphic descriptions of Sydenham, of those occurring in and near London in his time; or the later and very interesting accounts of the Gottingen mucous fever, by Rœderer and Wagler. Distressing as these visitations are to the unhappy poor, and harassing as they prove to the country practitioner, yet he cannot fail to derive some compensation in the interest these cases excite. Having obtained from experience and reflection correct principles of treatment, he may, with safety, pleasure, and advantage, often recur to the consideration of the theories and precepts of Clutterbuck, Armstrong, Broussais, Louis, Smith, Maculloch, and others.

[2] For information on this recent epizootic, I must refer to the *Veterinarian* for September last,—a very able periodical, in which medical men may often find very interesting papers and remarks; and to an elaborate and very excellent article in the *Dublin Journal of the Medical Sciences* for the same month, translated from the French of M. Rayer.

among us, but not very extensively. I have seen it rapidly pass through one large dairy. Its mode of attack is not uniform in the same situation. Some have the characteristic vesicles on the membrane of the mouth, lips, and tongue, on the teats at their apices, and also on the heels; while others have only the mouth and tongue affected, others only the heel, and most with different degrees of severity.

From the general richness and luxuriance of the pasturage, and especially in wet seasons like the past, dry cows,[1] and even young heifers, are attacked with inflammation and induration of the udder, called the "Garget," a disease which has been more than usually prevalent throughout the past summer.

Besides the true cow-pock, the variolæ vaccinæ, the milch cows here appear to be very subject to the following eruptive diseases and spurious pocks:—Inflammation and induration, sometimes suppuration of the cutaneous follicles at the base of the teats: small hard knots, cutaneous or sub-cutaneous in the same locality, about the size of a vetch, a pea, or even larger, which often remain indolent for a time, at length become red, vesicate, enlarge, suppurate, and burst after attaining not unfrequently the size of a walnut or more, occasionally affecting the hands of the milkers, and often the other cows milked in the same shed by the same hands: an eczematous eruption, with intertrigo on the udder and near the roots of the teats: warty growths of two kinds; one consisting of long, narrow, pendulous, and linear-shaped prolongations, easily removed, and often detached; the other of short, thick, compact, broad elevations, lighter in colour generally than the ground from which they rise, of various sizes, from that of a pea to that of a horse-bean, frequently very numerous on the teats, where they are often found bleeding and partially detached: *the Yellow Pock;* a pustular eruption resembling ecthyma on the teats and udders, succeeded by thin, dirty brown, or black irregular crusts: *the Blueish or Black Pock;* bluish, or black, or livid vesications on the teats and udders, followed by thin, dirty brown, or black irregular crusts, and some degree of impetigo on the interstices, near the basis of the teats: *the White Pock;* a highly contagious disease among milch cows and to the milkers, quickly causing vesications and deep ulcerations; often or almost always confounded by them with the true vaccine, and certainly not readily distinguishable in all its stages by better informed persons than milkers.

Before entering into a detailed description of these eruptive diseases or spurious pocks, I shall proceed to the consideration of the variolæ vaccinæ as they appear:—1st, naturally, or are produced casually on the teats and udders of cows by the manipulations of the milkers; 2dly, by vaccination; 3dly, by retro-vaccination; 4thly, by variolation.

[1] Cows not in milk.

GENERAL OBSERVATIONS.

The *variolæ vaccinæ* seem to have been long known in the Vale and neighbourhood. They have been noticed at irregular intervals, most commonly appearing about the beginning or end of spring, rarely during the height of summer; but I have seen them at all periods from August to May, and the beginning of June. By some it is presumed that cold and moisture favour their development; by others that the hard winds of spring, after a wet winter, are supposed to have the same influence. I have, however, seen the disease in the autumn and middle of winter, after a dry summer. The disease is occasionally epizootic, or prevalent at the same time in several farms at no great distance, more commonly sporadic or nearly solitary. It may be seen sometimes at several contiguous farms; at other times one or two farms, apparently under like circumstances of soil, situation, &c., amidst the prevailing disease entirely escape its visitation. Many years may elapse before it recurs at a given farm or vicinity, although all the animals may have been changed in the mean time; I have known it occur twice in five years in a particular vicinity, and at two contiguous farms, while at a third adjoining dairy, in all respects similar in local and other circumstances, it had not been known to exist for forty years. It is sometimes introduced into a dairy by recently purchased cows. I have twice known it so introduced by milch heifers. It is considered that the disease is peculiar to the milch cow,—that it occurs primarily while the animal is in that condition,—and that it is casually propagated to others by the hands of the milkers. But considering the general mildness of the disease, the fact of its being at times in some individuals entirely overlooked, and that its topical severity depends almost wholly on the rude tractions of the milkers, it would perhaps be going too far to assert its invariable and exclusive origin under the circumstances just mentioned; yet I have frequently witnessed the fact that sturks, dry heifers, dry cows, and milch cows milked by other hands, grazing in the same pastures, feeding in the same sheds and in contiguous stalls, remain exempt from the disease. Many intelligent dairymen believe that it occurs more frequently as a primary disease among milch heifers; but I have not been able to confirm this remark by my own observation. It does not appear to be less frequent on the hills than in the Vale. It has been seen primarily on the stall-fed as well as on the grazing animal.

Origin of the Disease.—I have met with several intelligent dairymen whose relatives had seen good reason to ascribe its occurrence to the contagion of the equine vesicle, communicated by the hands of the attendant of both animals; but very little of that disease has been noticed of late years, though I know of several farriers who have been affected from the horse, and resisted subsequent variolation or vaccination, and have seen a few who distinguish between the equine vesicle and the grease, a recurrent disease—eczema impetiginodes—

as it appears to me. For many years past, however, the spontaneous origin of the variolæ vaccinæ in the cow has not been doubted here. In all the cases that I have noticed I never could discover the probability of any other source.

There is much difficulty in determining with precision, at all times, whether the disease arises primarily in one or more individuals in the same dairy; most commonly, however, it appears to be solitary. The milkers pretend in general to point out the infecting individual; but as I have more than once detected the disease in a late stage on an animal not suspected of having it, I am not very prone to confide in their representations, unless my own inspection confirms or renders them probable.[1]

In some animals, the disease being mild, and their tempers good, little notice is taken of tenderness in milking, which is of frequent occurrence; whereas an ill-tempered animal, with not more of the disease, being very troublesome to milk, is sure to be considered the infecting source. Moreover, in the same dairy, at the same time with the true disease, some one or other of the spurious forms may occur in some individuals, causing difficulty in milking, and producing deep sores on the milkers' fingers, thus complicating the investigation and deceiving the indiscriminating milkers. The very frequent occurrence of inflamed, tender, and chapped nipples, in connexion with the time and mode of milking in closely arranged stalls, and in comparative darkness, renders these men in general unsuspicious of any specific disease till it has made pretty extensive progress through the shed. Their general incompetency to distinguish between the true and the false eruptive diseases, added to the above disadvantages, often creates insuperable difficulties in obtaining very important information, and frequently precludes implicit reliance on it when obtained. Hence another source of the numerous inherent difficulties which attend these investigations, and hence the cause of late intelligence precluding successful inquiries, and not unfrequently the loss of all knowledge of the fact of the existence of the disease; hence also the multitude of vexatious perplexities and disappointments which too often await the inquirer after facts, and the searcher after lymph. For the acquisition of a very moderate amount of real knowledge on this subject, much time and many sacrifices are required, since actual personal observation is indispensable; and even then it is only after extreme

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[1] An early conviction of the necessity of almost entire self-dependance in these dairy investigations soon led to the adoption of the following rules :—

1st. Not to be too fastidious in my footsteps.

2d. To be on the best possible terms with the milkers.

3d. To obtain all possible information from them, and believe nothing important which could not be confirmed.

4th. To inquire into the temper and habits of every animal to be inspected.

5th. To inspect with gentleness and caution, remembering that there was danger from behind as well as before.

6th. Never to be without a small pocket lanthorn, glazed with a thick plano-convex lens, wax candles, and the means of ignition, either to explore in the absence of daylight, or to obtain a perlustration of parts on which daylight can rarely impinge.

vigilance, quickened by repeated disappointments, with much inconvenience and considerable labour, that some of the objects sought can be obtained. The remote causes appear to be entirely unknown.

Condition of the animal primarily affected.—Here, again, the difficulties above mentioned often thwart inquiry, and the preliminary signs of the disorder are rarely noticed. Yet it must be admitted that this fact, though negative, justifies the presumption of the absence, in many instances at least, of any appreciable or very notable constitutional derangement. In the majority of instances I could not learn that food was refused, or any palpable febrile indications were noticed. In August, 1838, three cows were affected with the disease; the first was attacked two months after calving, and seven weeks after weaning. This animal was considered in good health, but to me appeared out of condition; it had heat and tenderness of teats and udder as the first noticed signs. The other two were affected in about ten days. In December, 1838, in a large dairy, a milch cow slipt her calf, had heat and induration of the udder and teats with vaccine eruption, and subsequent leucorrhœa and greatly impaired health; the whole of the dairy, consisting of forty cows, became subsequently affected, and some of the milkers. In another dairy, at the same time, it first appeared in a heifer soon after weaning, and in about ten or twelve days extended to five other heifers and one cow milked in the same shed, affecting the milkers. In another dairy, at the same time, thirty cows were severely affected, and also one of the milkers. It appeared to arise in a cow two months after calving. The only symptoms noticed were that the udder and teats were tumid, tender, and hot, just before the disease appeared.

Condition of the animals casually affected.—There is rarely any manifestation of fever or constitutional disturbance. In some seasons it appears milder than at other seasons. In some animals it is less severe than in others, depending on the state and condition of the skin of the parts affected, and the constitution and habit of the animal. It is sometimes observed to diminish the secretion of milk, and in most cases commonly does actually affect the amount artificially obtained, beyond which, and the temporary trouble, plague, and accidents to the milk and the milkers, little else is observed; the animal continues to feed and graze, apparently as well as before.

The topical effects vary much in different individuals, whether primarily or secondarily affected, the mildness or severity being greatly influenced by the temperament and condition of the animal, and especially by the state of the teats and udder, and the texture and vascularity of the skin of the parts affected. Where the udder is short, compact, and hairy, and the skin of the teats thick, smooth, tense, and entire, or scarcely at all cracked, chapped, or fissured, the animal may and often does escape with a mild affection, sometimes only a single vesicle. But where the udder is voluminous, flabby, pendulous, and naked, and the teats long and loose, and the skin corrugated, thin,

fissured, rough, and unequal, then the animal scarcely ever escapes a copious eruption. Hence, in general, heifers suffer least and cows most from the milkers' vaccinations and manipulations. Dark red and red-spotted animals are often seen more affected than those of a lighter colour, as might be expected, from the occurrence in them of the respective conditions above mentioned.

Progress of the disease.—The variolæ vaccinæ once arising or introduced, and the necessary precautions not being adopted in time, appear in ten or twelve days on many more in succession, so that amongst twenty-five cows, perhaps by the third week nearly all may be affected; but five or six weeks or more are required to see the whole number perfectly free from the disease on the teats at least.

The facility with which the disease may be and often is propagated by the milkers, is very remarkable. In December, 1838, on a large dairy farm where there were three milking sheds, the variolæ vaccinæ first appeared in the home or lower shed. The cows in this shed being troublesome, the milker from the upper shed, *after milking his own cows,* came to assist in this for several days, morning and evening, when in about a week some of his own cows began to exhibit the disease. It appears that having chapped hands, he neglected washing them for three or four days at a time, and thus seemed to convey the disease from one shed to another. During the progress of the disease through this shed, one of the affected cows, which had been assailed by its fellows, was removed to the middle shed, where all the animals were perfectly well. This cow being in an advanced stage of the disease, and of course difficult to milk, and dangerous to the milk pail, was milked first in order by the juvenile milker, for three or four days only, when, becoming unmanageable by him, its former milker was called in to attend exclusively to it. In less than a week all the animals in this shed shewed symptoms of the disease, though in a much milder degree than it had appeared in the other sheds, fewer manipulations having been performed by an infected hand.

The progress of the disease, however, is not always so readily or so satisfactorily traced, and I have felt induced to think sometimes that more than one animal has had the natural form in different parts of the same dairy. Nor is the disease necessarily communicated to all the animals milked by the same hand; not only do some older animals escape, but I have seen several times young milch heifers, exposed to all the circumstances favouring contagion amidst the rest of the herd, entirely escape.

Topical symptoms of the natural disease.—For these we are almost always, in the early stage, by reason of the circumstances above mentioned, compelled to depend on the observation and statements of the milkers. They state that for three or four days, without any apparent indisposition, they notice heat and tenderness of the teats and udder, which are followed by irregularity and pimply hardness of these parts, especially about the bases of the teats and adjoining vicinity of the udder; that these pimples, on skins not very dark, are of a red colour,

and generally as large as a vetch or a pea, and quite hard; that in three or four days many of these having increased to the size of a horse bean, milking is generally very painful to the animal, the tumours rapidly increase in size and tenderness, and some appear to run into vesications on the teats, and are soon broken by their hands; milking now becomes a troublesome and occasionally a dangerous process. It is very seldom that any person competent to judge of the nature of the ailment has access to the animal before the appearance of the disease on others of the herd, when the cow first affected presents on the teats acuminated, oval, or globular vesications, some entire, others broken, not unfrequently two or three interfluent. Those broken, have evidently a central depression with marginal induration; those entire, being punctured, effuse a more or less viscid amber-coloured fluid, collapse, and at once indicate the same kind of central and marginal character. They appear of various sizes, from that of a pin's head, evidently of later date, either acuminated or depressed, to that of an almond, or a filbert, or even larger; dark brown or black, solid, uniform crusts, especially on the udder, near the base of the teats, are visible at the same time; some, much larger, are observed on the teats; these, however, are less regular in form, and less perfect; some are nearly detached, others quite removed, exhibiting a raw surface, with a slight central slough. The forms of the crusts on the udder are either circular or ovoid, slightly acuminated or depressed, and the crusts seem imbedded in or surrounded with more or less indurated integument. On the teats the crusts are circular, oval, oblong, or irregular; some flatter, others elevated and unguiform, several irregular, some thin and more translucent, being obviously secondary. The appearance of the disease in different stages, or at least the formation of a few vesicles at different periods, seems very evident. The swollen, raw, and encrusted teats seem to produce uneasiness to the animal only while subjected to the tractions of the milkers, which it would appear are often nearly as effective as usual.

Most commonly, however, the observer, instead of seeing the above phenomena, does not arrive at the dairy until the cicatrices are nearly healed on the animal first affected, when he commonly finds the greater part of the animals in the same house in different stages of the disease. When he is fortunate enough to have an opportunity of watching the disease in its progress through the different parts of a dairy, and can carefully and diligently inspect all the animals in succession, he may observe the

Topical symptoms of the casual Variolæ Vaccinæ.—It is very rarely that any indications of contagion, after undoubted exposure, are manifested before the sixth or seventh, sometimes not till the eighth or ninth day; but a vigilant observation of thin-skinned animals, with chaps and cracks on the teats, will exhibit small red, rather tender papulæ near the udder and on the body of the teats about the fifth day. On the sixth and seventh day, in cows with white

clear skins, on the lower parts of the udder are observed circumscribed indurations, generally of a reddish colour, and of a circular, ovoid, or lozenge shape, as large as a vetch or a pea; a few are still larger, six lines or more in diameter, and have a central depression very palpable to the finger, in which is visible a small, dirty, yellowish white discolouration, surrounding a still darker dot or line, sometimes angular, thus— ◁; these indurations are often interspersed with minute red papulæ of a darker colour, rather acuminated, often with abraded summits. Some of the tumours[1] contain within their centres a slender amber-coloured, yellowish brown, or brownish black crust, these being less tumid and prominent than those without the crusts; they are all very tender, even when slightly compressed. On the teats, especially on the lax and extensile skin of their base, similar tumours are observed, often in considerable numbers, generally circular, about the size of a vetch or a pea, some even smaller; on the bodies, and even to the apices of the teats, they are also numerous, and frequently ovoid, from ten to fifty or more. On all these parts of the teats the circumscribed intumescence and induration is less apparent and less defined than on the udder; but the pearly or glistening lustre of their margin and part of their centre is nearly as manifest. In animals with dark skins, at this period, the finger detects the intumescent indurations often better than the eye; but when closely examined, the tumours present at their margins and towards their centre a glistening metallic lustre or leaden hue; but this is not always the case, for occasionally they exhibit a yellowish or yellowish white appearance. Those in which a central crust has formed are readily detected, and on others which have been compressed, or had the cuticle abraded, there appears a crystalline amber-coloured translucent mass of concrete lymph on the surface, sides, and vicinity, leading to the detection of what might otherwise have been overlooked. On the eighth and ninth days, in animals with fair skins, on the udder, some of the tumors appear with more central depression, and more elevation of the margin, which is solid, uniform, tense and shining, extending to seven or eight lines, of a glistening white, pearly, or silvery hue, and in the centre of many is observed a blueish or slate-coloured tint. Around the base is often apparent a narrow pale rose or light damask areola, not more than a line or two in width. In others the central crust is increased, and is yellow, brown, or black; a few appear a little pustular in their centres. On the teats corresponding changes have taken place in the tumors which remain entire; a few small conoidal vesicles also appear to have subsequently risen; some have a slight depression on the apex; they may be found from the size of a pin's head to that of a pea. But generally, the majority of the tumors are more or less abraded or otherwise injured, either by the animal while recumbent, or by the merciless manipulations of the

[1] I use the word "tumours," not because I think it correct, but merely in contradistinction to the elevations which are *palpably* vesicular.

milkers; hence is seen lymph exuding from the centres, with cuticle loose or partially detached, raw surfaces, brown or black crusts, either primary or secondary, and here and there the cuticle entire raised from the centre of the tumour, forming a vesicle of a conoidal shape, often slightly depressed at its apex with a dark central spot, and distended with pellucid lymph, around which there is generally some appreciable intumescence and induration. Many tumors are found coalescent and several vesicles interfluent. In very dark-skinned animals, instead of a blueish tint of the centre of the tumors, a leaden-coloured or metallic glistening hue is apparent there and over the intumescent margin. In those less dark, with thin skins, a yellowish or dirty yellowish white, sometimes pustular appearance is observed in the centre and on the margin, and instead of a well-defined surrounding areola there is in some perhaps a reddish brown or tawny hue; but in all, heat and circumscribed induration, especially where the skin is thick, corresponding to the limit of the areola in others.

Between the tenth and eleventh days the disease in general reaches its acmé. On the udders the tumors are often from eight to ten lines in their largest diameter, and in white skins the centres and central edges of the intumescent margin are of a deeper blue or slate colour, and the areola, which is usually of a pale rose colour, is seldom more than four or five lines in extent, under which the integuments are deeply indurated. Lymph, which two days before was difficult to procure from beneath the cuticle of the central depression of some tumors, is now so copious that it raises the cuticle, forming a globular or conoidal vesicle, or freely flows out from its rupture. Other tumors have a greatly extended brown or black central crust, either slightly acuminated or depressed, encroaching on the marginal intumescence; others have become flatter, entirely encrusted, and perfectly passive. On the teats, the few which remain unbroken undergo similar changes, but appear to have less extent of areola, and less circumferential induration; the skin here being loose and extensile, the coalescent tumors are more or less abraded, and have acquired primary brown or secondary black crusts, or a combination of both; the interfluent vesicles are more or less covered with brown or black, oblong, irregular, solid or unguiform, strong, compact crusts, or, denuded of cuticle, are raw, swollen with elevated margins, discharging blood, lymph, and pus. On and after the twelfth day, on the udder nearly all is passive; the central brown or black crusts have rapidly increased, and the marginal induration and intumescence have proportionately subsided; the few remaining unbroken vesicles gradually acquire a brown or blackish hue, shrink, and desiccate within their subsiding induration. The central crusts above alluded to, if undisturbed, though they may become thicker and darker and more compact, seldom increase in breadth after the thirteenth or fourteenth day. The marginal indurations within which the central and vesicular crusts are always enclosed, though they now and then, for a day or two, seem irregularly to renew their former elevation, gradually subside, and

have nearly disappeared on the spontaneous separation of the crusts, which takes place on the twentieth or twenty-third day; but even then some traces of induration are left surrounding the cicatrix or pit, which is shallow, smooth, oval, or circular, of a pale rose, white, or whitish colour, according to the contrast of the surrounding pigment.

On the teats about this period—the twelfth day and onwards—around their base, the tumours and vesicles which are left entire, exhibit the like appearance; central crusts of various sizes, brown or black, imbedded in less indurated marginal elevations; vesicles in various degrees of advancement towards desiccation; some with flaccid, flattened cuticle, of the colour of the surrounding pigment; others, more advanced, with yellowish light brown, and others, desiccated into dark brown and blackish, slightly acuminated or centrally depressed, oval or circular uniform compact crusts. On other parts of the teats, out of the way of the milkers, and where the tumours or vesicles have been small, few, or solitary, the same may be observed; but most commonly, and always where these have been large, numerous, and coalescent or interfluent, the skin thin, loose, and vascular, and the animal inordinately irritable, a very different state of things is observed. Large black solid crusts, often more than an inch or two in length, are to be seen in different parts of these organs; some firmly adherent to a hard and elevated base; others partially detached from a raw, red, and bleeding surface; many denuded, florid red, ulcerated surfaces, with small central sloughs, secreting pus and exuded blood; the teats excessively tender, hot, and swollen. Not unfrequently one or more teats form a tumid mass of black crusts and naked red sores, secreting a discharge which imparts to the finger that touches it an odour strongly resembling that which emanates from a patient in the last stage of small pox. In some animals, under some circumstances, this state continues little altered till the third or fourth week, rendering the process of milking painful to the animal, and difficult and dangerous to the milker. In many, however, little uneasiness seems to exist; the parts gradually heal; the crusts, though often partially or entirely renewed, ultimately separate, leaving apparenely but few deep, irregular cicatrices, some communicating with the tubuli lactiferi, the greater part being regular, smoothly depressed, circular, or oval. Occasionally warty or fungous growths succeed some of the deeper ulcerations. It not unfrequently happens that the central deeper part of the depressed cicatrix, even when not very large, continues to retain a thin flimsy irregular incrustation, (secondary or tertiary), as late as the end of the fifth week, or even longer.

(*To be continued.*)

EDINBURGH VETERINARY REVIEW

AND

Annals of Comparative Pathology.

THE ROYAL AGRICULTURAL HORSE SHOW AT LEEDS.

In another part of our *Review* will be found the reprint of an ably-written letter, which we borrow from the *Times,* on the above subject, by Sub Umbra. It is the broad and philosophic views embraced by the author which lead us to offer a few comments on his letter, and further remarks on the same subject. Like many well-conceived and ably-written essays, the one before us contains parts regarding matter of fact and doctrine with which we do not entirely agree. The author says, "Will the object of the meeting be best attained by deciding upon the merits of the horse from the excellence of his stock, or from the physique of the animal himself?" "The first object in awarding the prize is the benefit to be derived by the public." All will agree to the last proposition; the question to be decided of practical bearing, is, How are the objects desirable to be realized? That on this question we are on debatable ground, every day's experience, and the varied opinions we encounter, is evidence. As yet we have seen no defined laws for the exercise of the judge's discretion. When the ablest of our many able judges of horses have been elected, we should prefer to give a fair margin for the exercise of their judgment, in preference to drawing too limited a line. It should be borne in mind, that whilst each individual elected to the important honorary office exercises a special opinion, often derived from a local experience among horses of a particular class, another brings to bear a more general knowledge of the subject in reference to all classes; collectively, the judges among themselves form a jury, the most likely of any we could desire to come to a fair conclusion. We look on the advantage to be derived by the public in judging the relative merits of thoroughbred stallions at Agricultural Shows, as supplementary and additional to the trial of their speed and endurance, the chief end for which races were instituted. It has been pretty fairly proved, that racing is not the only test to ensure, in all respects, a breed of the stoutest and best horses for general purposes. Able judges of horses, and those whose experience guides them far into

the best modes of breeding, will not select a horse simply because he won the Two Thousand, the Derby, or St. Leger, though these performances prove much; and when form, action, and soundness, are equal, they should decide in favour of such horse against the untried one. The writer of the article, from which we have quoted, very justly refers to the more numerous and better class of mares that are sent to great winners compared with the chances afforded a non-winning stallion, however good. The great winners require no recommendation from the Royal or local Agricultural Shows; they always attract sufficient notice, and sometimes more than their qualities merit. There are two ways by which the awarding of prizes to the best thoroughbred stallions may be expected to operate favourably in the public interest; first, and mainly, by bringing to notice many good animals; and by that means preventing them being sold away because not found to pay for keeping; or, secondly, in other cases, years, and almost the life of the horse, are passed before he is brought into notice, and procures mares sufficient to remunerate his owner for the outlay and risk of keeping him. On looking over lists of stallions, it will be found that they, like many of our best men, have had to work their way to public notice upwards. Well managed exhibitions would prevent such horses as Wormsley being exported, at four years old, for the price of three hundred guineas, when more thousands are often paid at home for leggy animals, in no way calculated to produce good stock. We are constantly seeing fortunate winners advertised first at high prices, and, after a few years, coming down to a low level in public estimation and patronage; whilst, on the other hand, we see others, really good stout horses, going on for years barely paying their way, yet at last their merit, as proved in the few specimens of their stock, brings them into public notice. Agricultural societies will help in advancing, hence in multiplying the use of such horses; as examples of the class to which we allude, we adduce such as Sweetmeat, and even the Cure. The latter horse was selected for the Hampton Court paddocks when eighteen years old; but there are many good horses, the real merits of which never become known, because no accidental circumstance brings them before the public. We need not go back for examples to the days of Old Mask, nor yet to those of the renowned stallion in our own day, Phantom, a horse that served mares for two guineas, in Yorkshire, and afterwards at fifty guineas each, at Newmarket. Brutandorf also served mares in the East Riding of Yorkshire at two

guineas each for several years, between the time he got Physician, and that when Hetman Platoff was one of the best race-horses of his time. The old horse was more than twenty years old when his fame as a stallion, adapted to get all classes of horse, was proclaimed; he then found a purchaser to take him out of the kingdom.

As to the rules that should guide judges of stallions at public exhibitions, once the class of horse to be judged is understood, there should be no difficulty in defining the rest. All questions should be weighed which relate to what experienced breeders consider necessary qualifications in a stallion. It has been questioned whether the judges are to take any heed of the pedigree of a horse; but when it is stated that the class to be judged is that of thorough-bred horses, the question is disposed of. The judges should see that they are thorough-bred: hence genuineness of pedigree is for their consideration. There are many of our best judges who always scrutinize their horse, and judge of his merits as they see him; and such a judge we like to see amongst the elected. There are other good judges who investigate their line of descent, from the parent Arab or barb down to the animal before them, and also take into account the performances for which their line of ancestors has been renowned. In fact, we are of opinion that it is the province of the judges to weigh every circumstance in connection with the horse which may add to or detract from his value.

The correspondent in the *Times* says: "The first and second prizes were awarded to Voltigeur and the Cure, at the exhibition in Cleveland, remarkable for the excellency of their stock, though in themselves not having the impersonification of such extraordinary merit." Now, if what has just been stated were correct, it would tend to discourage breeders from searching for stallions of the very first order, such as Voltigeur is in every respect. In the spring of the year, when two years old, Voltigeur was proclaimed to be the finest colt in Yorkshire. That he was the best horse in England at three years old, all the horse-admiring world knows; and that he finished his racing career as sound and as free from blemish as when he began, is also well-known—proofs, we submit, of his stamina and promising qualifications as a stallion, promise which became a reality on the first appearance of his stock, among which were Vedette and other first-class race-horses. We hold it important to show that Voltigeur is not the sire of many of the stoutest and most valuable horses by accident; but in him we have exhibited a type of the powerful bloodhorse, so

much required by breeders in general. In conclusion, we will briefly notice a recommendation in the article to which we are referring, viz.—that one or two of the judges should be members of the veterinary profession. We shall not go into details on that point; suffice it to say, that the veterinary profession will have fulfilled its office by seeing to the health of the animals, and by distinguishing correctly between inherent infirmities and such blemishes, or even some kinds and degrees of unsoundness, the effects of severe work, and which are no more likely to be transmitted to the offspring than are the soldier's wounds to his children.

SEASONABLE INTERVALS OF REST FOR RACE-HORSES.

Nearly allied to the summering of hunters, treated in our last, is a conservative system of managing race-horses at some intervals during their training career, by laying them aside from all work, to be restored by proper and sufficient rest. We are aware of the many difficulties that stand in the way of procuring the required rest for a horse in training, however much the veterinary surgeon might deem it desirable; but if the views we entertain (and they have been only arrived at after long experience), point to a system which would prevent many of our best horses being lost, if they be calculated to enable others to run on longer, to retire from the turf fresher and more valuable as stock-horses, and at the same time be a source of saving to owners and sporting men, it cannot be denied that the attainment of desirable ends may be promoted by a careful consideration of the subject. We are penning these remarks in full knowledge of most of the objections that have been advanced against resting race-horses. The first is, their many engagements speculatively entered on long before they are to come off; another reason urged by trainers is, that horses at rest put up flesh to an extent requiring an amount of after-work before they can be brought to the post, which neutralises any good effect the rest may have had. Over the first difficulty—that of the horse's engagements, whatever their nature—the veterinary surgeon has no control; still, there can be no doubt that on the due consideration of that question, much will depend whether advice can be taken when given respecting a horse being put for a time out of work. Taking a case where the training-groom begins to see signs in the horse's going, or in the stable, which create his fears as to the state of the animal's constitution and limbs, our recommendation is, that

advice and restorative measures be at once taken adequate to the requirement. Under such circumstances, we should advise the owner to pay forfeit for the horse's early engagements, to give the greater chance of winning others later in the season. At times it will happen that advice may have to be given not to run the animal at two-years-old, but reserve him under proper management for his three-year-old chances. In almost all cases in which the feet, legs, or constitution of a race-horse require medical treatment, the most effectual as well as the most economical means will be found to be that of giving complete rest—we say complete and thorough abstinence from work, because the half measures usually adopted are seldom productive of good, but lead to disappointment ultimately. We generally find no difficulty in obtaining the compliance of owner and trainer, when a horse is going badly on his feet and legs, to obtain a cessation for a time from fast work; but that is a very different thing to rest—the horse is walked, and in fact does almost the work of an ordinary horse—no rest or relaxation is given to injured and sore organs. What we really want is the removal of all cause of the actual state; we want to take his shoes off, not to hack and cut his feet, but by proper means as far as possible to restore both feet and legs to their full health and tone. From thirty to forty days may be required, seldom more, to restore a horse whose state admits of his racing during the same season.

For a moment we would lay aside the professional, and take up the trainer's view of this question, endeavouring always to keep within known bounds defined on scientific grounds and practical experience. A race-horse moderately advanced in his training, may be so managed whilst at rest in a loose box for a month as not to incapacitate him, with two months' after preparation, to run for any engagement; all his regular stable management should be kept up as if at work, only diminishing his quantity of corn about one-fourth, but that to depend on the state of the horse, to be estimated by the trainer, who should understand that an animal does not create superfluous fat except from a superabundance of food. Most trainers know that the state of a horse least to be desired, next to unsoundness, is that of a poor one, and a horse whose fat is all absorbed is impoverished, and requires replenishing as a lamp requires trimming; thus the constitution as well as the limbs of a race-horse will often improve incalculably by timely rest. As success or failure of any plan may result according as it is well or ill carried out, we shall just

say how we should treat a horse whilst at rest; but first of all point out some things that are commonly done, and which we should not do. We should not add to any existing complications by the application of blisters, setons, firing, rasping, and hacking feet as is generally done, but at once aim to remove all causes of irritation; hence remove shoes, apply fomentations or lotions to injured parts for a few days, when the heat and soreness would subside, leaving to rest, and voluntary movement such as a loose box would afford, and nature's restorative powers, to do the rest. We should not give strong physic, and only in some cases one very mild dose just as the horse was being put to work again. The larger the loose box, the better; it should be well paved and well ventilated. We object to a thick bed of litter, and to any dung being allowed to accumulate beneath it, as we also object to a horse standing on the bare stones; but we insist on the stable being swept out clean every morning, and a thin layer of straw only sprinkled over the stones; in some cases we prefer to litter half or two-thirds of the box, and leave the floor bare over the rest; this especially in cases where we wish the feet to be brought in contact with the hard surface. It need scarcely be said that that which we are recommending for the race-horse is equally applicable to the hunter, or any other horse. In conclusion, we submit that, admirably as our trainers bring many horses to the post, the number of these would be greater if more rational rules were introduced and adopted from the time the foal leaves his dam until he returns back to the stud as a stallion; and here we may cite a good example in the different ways that mares and stallions are restored after they leave the trainer's hands—the former soon exhibit their naturally well-formed feet and flat legs, whilst the stallions, by shoeing and confinement, too often remain confirmed unsound horses. How far some of these conditions tending to permanent degeneracy may affect their progeny, we will not now attempt to determine.

PROTECTION FROM QUACKS.

We have much pleasure in directing attention to the communication, (p. 460), from a retired member of the profession, who has claimed the privilege, which we are always happy to grant whenever personalities are not in question, of anonymous correspondence. The principles inculcated are so far in accordance with our own, that we admit them almost without qualification. We are still of opinion that, were it possible to obtain for the veterinary profession an Act some-

what similar to the Medical Act of 1859, it would be of great advantage. Certainly the conviction of a quack, practising as a qualified man, can no more tend directly to advance the dignity and usefulness of the profession, than the arrest and sentence of a pickpocket or burglar can operate in raising the standard of commercial integrity; yet everybody agrees upon the expediency of punishing such villains. Free trade is a magnificent doctrine, yet the progress of modern opinion and legislation has tended to restrict free trade on important matters. Freedom and licence are not convertible terms; on the contrary, the ideas they express are often antagonistic; and in practice it is found necessary to curb licence, that freedom may be enjoyed.

It is found expedient for the public interest to check men practising at their pleasure as barristers and physicians, attorneys and stockbrokers; and we are very strongly inclined to the opinion that similar reasons will be found applicable, for the guarantee of property and the public health, to forbid persons, not duly qualified, practising as veterinary surgeons. Legally our position is a very strong one, for the Charter, in virtue of which we exist as a profession, specially provides that only such persons as are deemed qualified to admission by the General Council, and the delegated examiners, shall be regarded as veterinary surgeons. It may seriously be questioned whether a man claiming fees for attendance as a veterinary surgeon could recover them if not on the Register, and we are advised that the council might move the courts to restrain persons assuming the title when not legally entitled to it. The subject is certainly well worthy of calm thought, and it is only upon very mature deliberation that we have solicited discussion upon it.

Our correspondent's observations on the examinations for the diploma have our most cordial assent, and we invite to their consideration the members of the Council and the Examining Boards here and in London; while we promise a Retired M.R.C.V.S. ready publicity for any more communications calculated to elicit honest opinion on questions involving the welfare of the profession. Experience teaches that advance is slow enough in spite of earnest endeavours; without such efforts it is quite certain progress must be *backward*. It is impossible to remain stationary; and it is well to bear in mind that the springs of onward action are at the command of every man endowed with fair intelligence, and honestly resolved to speak the truth for his own and others' good.

CLEMENTS *v.* M'KENNA.

It is gratifying to the members of any profession, when a question affecting their common interests can be settled as satisfactorily as the one raised at the Belfast Quarter Sessions on the 6th July, 1861. The profession is indebted to such men as Mr M'Kenna for having raised their calling in the estimation of the world by many years' unwearied exertion and skilful practice. Though Ireland complains of a want of veterinarians, Belfast has been well supplied since the defender in the above action entered on his very successful career. So much is the name of M'Kenna respected in the north of Ireland, that it is astonishing any person should hazard an attack on the ground of professional incompetency, but when such attacks are to be made, it is very fortunate that they are made on men who can so well repel them, and who, in their easily-won victory, inspire the world with a just sense of respect for a new and rising profession.

The facts of the case are briefly told.—An overgrown, plethoric colt, two years of age, is taken to Mr M'Kenna to be castrated. The state of obesity in which this young animal had been improperly kept, was so great, that with great prudence Mr M'Kenna administered a dose of purgative medicine, and four days after the animal was cut with the caustic clams. No horse could do better, and on the 8th of May was taken home. Mr Clements called a few days after and paid the account, in no way complaining of the operation, but rather thanking Mr M'Kenna for his trouble. On the 2nd of May the horse was turned out to grass, and according to Mr Clements' evidence, he was ten days out before anything wrong was observed. Mr M'Kenna attended the case, and the animal died from general dropsy and liver disease. Our readers will see from the report, that the case was dismissed, and Mr M'Kenna complimented, after the evidence for the plaintiff alone had been heard.

The origin of the dispute was certainly mysterious. It was attributed to a veterinary student, and had the plaintiff not been strengthened by veterinary opinions, we cannot believe the case would have been taken to court. No greater token of respect, however, could have been paid Mr M'Kenna, than by the evidence of the veterinary surgeons summoned for the plaintiff.

ADVERTISING QUACKS.

THAT pest of the medical art, whether professing the cure of diseases of man or animals—the advertising quack—is more successful in degrading a profession in the eyes of many, than a host of the blunders and incongruities which unskilful members can be charged with. What will the readers of the *Cambridge Chronicle* and *University Journal* say to the subjoined advertisement, for a perusal of which we have to thank some distant friend—may-be the distinguished author of the announcement himself:—

VETERINARY COLLEGE.

G. B. WEBB

BEGS to thank the Gentlemen Farmers of Balsham, and its neighbourhood, for allowing him to Leave Home to attend this Tree of Knowledge (which he intends stripping for their benefit) and to say that he shall Return Home to Balsham in a few Days with a thorough knowledge of all new Diseases, new Remedies, new Modes of Treatment, and everything Scientific and new fashion, and that he shall not take the advantage of this innovation in his charges.

London, May 3, 1861.

It is still the practice when young veterinarians select the district over which they intend to secure remunerative occupation, to announce their intention by advertisement. In some way or other all men advertise their qualifications. The young barrister walks about a court-house with a wig on, when—but for the sake of being seen in a place where business can be secured—he would be studying law or improving his mind some other way. The aspiring physician or surgeon aims at writing a book, which admits of being advertised, and a common subject, or rather one treating of very common diseases, is related to attract special sufferers. A 'John Churchill' receives fifty pounds and the MS., with a request that it be produced in the best style, published in all the catalogues, advertised in the medical papers, *Times*, and other periodicals, saving the author from further loss. Veterinary surgeons not unfrequently take to the hunting field, and by this means often ruin themselves as fast as the aspiring medical author who does not adopt the 'fifty-pounds' system above referred to, but has implicit faith in taking the world by storm with his facile pen and indisputable facts.

It is therefore not a sin to advertise, though regarded as improper, on the part of professional men, when they allow their names and degrees to be inserted in the same columns as the announcements of 'Glenfield Patent Starch,' and 'Revalenta Arabica.' They are per-

mitted to advertise lectures, books, appointments, &c., but not to say, 'John Smith, M.D., may be consulted daily at his house, 48 Belgrave Square,' &c., &c.

We think that as the public connect the practice of advertising with quackery—so far, at all events, as the *ars medica* is concerned—veterinarians would consult their own interests better, and certainly the interests of the profession, by abstaining from any unnecessary parade in the newspaper columns. We have often been more than surprised at the subjoined, which appears every Saturday in the *Dublin Agricultural Review:*—

ADVICE GIVEN ON DISEASES OF HORSES, DOGS, AND SHEEP, AND THE SOUNDNESS OF HORSES ON PURCHASE.

MR HUGH FERGUSON,
Veterinary Surgeon to the Queen in Ireland,
R. Professor of Veterinary Surgery,
Fellow of the Royal Veterinary Colleges of Alfort, Paris, and London,
Gold Medallist from the London College for the Best Treatise written by a Veterinary Surgeon, &c.

ROYAL VETERINARY INSTITUTION,
HARRY-STREET (Grafton Street), DUBLIN.

An Infirmary for the Reception of Animals, and a Forge in which Horses are Shod under Mr Ferguson's supervision.

Our Irish friends have a great advantage over Scotch and English veterinarians, in the system, universal in Ireland, of horses being bought subject to the opinion of a veterinary surgeon. They need advertisements far less than in Great Britain, and they must certainly injure their professional status by the too frequent practice in Dublin of publishing their readiness to give advice, or announcing themselves as medicine vendors, as we have occasionally seen.

Mr Webb may rest assured that his "thorough knowledge of all new diseases, new remedies, new modes of treatment, and everything scientific and new fashion," is not the kind of knowledge which the farmers of Great Britain care for, and which he lowers himself by advertising.

VETERINARY JURISPRUDENCE.

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BELFAST QUARTER SESSIONS.

On Saturday, July 6, 1861, at the Quarter Sessions for the Belfast Division of the County Antrim, before the chairman of the county, John Hastings Oturay, Esq., Q.C., a case came on for hearing which was

IMPORTANT TO VETERINARY SURGEONS.

William Clements *v.* William M'Kenna, V.S.

This was an action brought by the plaintiff, a Mr William Clements, a farmer residing near Dundonald, in the County Down, against Mr William M'Kenna, V.S., May Street, Belfast, for a sum of L.40, the value of a young horse belonging to the plaintiff which died some time after having been castrated by the defendant. The ground of the action was alleged as unskilful treatment.

Mr Alexander O'Rorke, solicitor, appeared for the plaintiff; and Mr William Seeds, solicitor, and Mr James M'Lean, solicitor, for the defendant.

Mr O'Rorke asked to have a jury sworn to assist his worship in the case. He had given the required notice in the suit, stating that he would ask for a jury.

The *Chairman* directed a jury to be called and sworn.

The *Sub-Sheriff* then called a jury, and the following six gentlemen were empannelled and sworn:—Messrs Andrew Mayne (Foreman), Henry Love, John Adair, George Hill, William John Lavery, and Thomas Ogsten.

Mr O'Rorke opened the plaintiff's case, and said—Mr Foreman and Gentlemen of the jury, in this I appear for Mr William Clements, a farmer in the County Down. It is really a very important case. It is against Mr William M'Kenna, a well-known veterinary surgeon in Belfast. The allegation which we make is, that the defendant performed an operation on a very valuable horse in an unskilful manner, so that the animal died. The horse was one of a very valuable breed. In the month of May, 1861, on the fair day of Belfast, which was, I believe, Wednesday, May 1, my client, Mr Clements, brought the horse in question into Belfast for the purpose of having him castrated. He took the horse to Mr M'Kenna's yard, and there saw the defendant himself. He consulted Mr M'Kenna about having the operation performed that day, and Mr M'Kenna said the horse was too fat, and said he would give the animal physic, and then let my client take the horse home and bring him back the next Saturday. This was done, and the following Saturday Mr Clements brought the horse back as directed. My client asked Mr M'Kenna if there was any risk, and consulted him on the propriety of having the horse insured. Mr M'Kenna scouted the idea, and said there was no use in throwing away money. The horse was a valuable horse, and because of this Clements was cautious about the matter. The operation was performed by Mr M'Kenna, and Mr Clements asked when it would be safe to remove the horse? Mr M'Kenna said he could safely be removed on Wednesday; and that he might be put out on grass in ten days from that Wednesday. My client, accordingly, took home the horse on Wednesday, and, when taking him away, Mr M'Kenna gave directions what was to be done with him. I need not go through them one by one—they will be detailed to you in evidence—but every one of them was strictly attended to. The horse was carefully stabled, and was kept in for fourteen days from the Wednesday referred to—Mr M'Kenna having stated ten days. He was not put out for fourteen days, and he was upon the grass for some days before he was found not to be doing very well. When my client found that the horse was not doing very well, he went into Belfast and told Mr M'Kenna, gave the horse a ball, and left four more with Clements, with directions how to use them. The one ball was all that was given—none of the others were given. The one was

too much for the horse; he purged violently until he died. When the horse became bad, after having got the ball, my client went into Belfast again and saw Mr M'Kenna's son, who said his father would go out that night. He did not go out, and the next day my client went in and brought him out. You will observe that, whenever any change took place in the horse, my client informed the defendant of it; and Mr Clements will tell you that he attended to all the directions which he received. The effect of the ball was to create, as I stated, a violent purging. When Mr M'Kenna was brought out he altered the treatment, and administered another description of medicine; and, besides this, he gathered up and took away the four balls which he had previously given, and left four others in their stead. As I understand, the plaintiff has not the means of producing those balls here to ascertain what they were made of, Mr M'Kenna having taken them away. Instead of getting better after the change of medicine the horse got worse. Mr M'Kenna went out again and gave the horse a dose of something which literally turned him mad. We can't tell you what that dose was; but from the time he got it, he could hardly be kept in the stable. The people who saw the horse will tell you that he was in a most violent state, having to be tied up to keep him from tossing himself about. Mr M'Kenna went out again, and then he took away the rest of the second description of balls which he left—the first gave the horse a violent purging, and the second drove him mad. Now, gentlemen, there is a fact about this case, and his worship will, I think, say when he hears it, that it is a fit case for a jury, because it will be for a jury alone to account for the strange conduct of Mr M'Kenna. When Mr M'Kenna heard of the horse's death he went out, and the first thing he asked was—"Who is your butcher!" Mr Clements told him. He waited until the hide was taken off. He then asked Mr Clements where he was going to bury the horse? He never left until he saw the hole completely filled up. If this be true, it will be for you, gentlemen, to account for it. Gentlemen, it does occur to me, and it may occur to you, that Mr M'Kenna could have got a veterinary surgeon to hold a *post-mortem* examination on the horse. It occurs to me that this conduct of Mr M'Kenna was to prevent a *post-mortem* examination. The cutting up of the horse in twenty or thirty pieces was calculated to prevent any attempt to hold a *post-mortem* examination, as it would have been totally impossible for any professional gentleman to have held such. Gentlemen, I think, you will find, on the evidence of my client, that every instruction given by Mr M'Kenna was strictly carried out; and, it will be for you to say whether, in your opinion, the operation was performed in that skilful manner in which Mr M'Kenna as a veterinary surgeon, should have performed it.

William Clements examined by *Mr O'Rorke.*—I reside in the County Down. I remember the month of May last. I was the owner of a valuable horse—a two-years-old. He was pretty well bred. He was worth L.40. He got the first prize at the exhibition in Belfast. In the month of May, on the fair day (Wednesday 1st), I took him to Mr M'Kenna's establishment with the view of letting him see the horse for the purpose of having the animal castrated. I saw Mr M'Kenna. He did not perform the operation that day. He said the horse was fat, and he would give him a dose of physic. His man gave it. He told me to bring the horse back on Saturday, (4th May). I accordingly brought him back, and saw Mr M'Kenna himself. I asked him, was he going to castrate the horse, and he said he would. I had not the horse insured. Before he was cut, I asked Mr M'Kenna would he insure the horse? I asked him would he insure the horse, to pay me for him if he would die?

Mr O'Rorke.—What did you mean by insuring the horse?

Witness.—That he would pay me the price of the horse if he should die.

Mr O'Rorke.—Did you want to have the horse insured with an Insurance Company?

Mr Seeds.—I beg that Mr O'Rorke will put no construction on what the witness has sworn.

The *Chairman.*—There need be no further questions put on this matter. The witness has told us what he meant.

Examination continued.—The horse was castrated on that day. Left him under the charge of Mr M'Kenna. I went home that evening. Left the horse at livery in Mr M'Kenna's stables. He did not tell me when to come back. I sent in a messenger on Tuesday, (May 7), and in consequence of what he told me I went in for the horse on Wednesday, (May 8.) The hostler gave him to me on Wednesday. I got directions how I was to treat him. I got the directions when I was in before that. It was on the Sabbath day I got the directions. Mr M'Kenna told me to stupe him with hot water. I carried out the directions to the point. Mr M'Kenna told me the horse would be fit to put out on the grass in ten days. I did not put him out for four days after. During that time I continued the stupping. I kept him fourteen days in the stable entirely after bringing him home. He was out ten days on the grass before that there was anything wrong with him. I then came into Belfast and went to Mr M'Kenna's. That was on a Monday in May last. I saw the old man, told him what was wrong, and asked him out. He followed me out that evening. He did not give me anything, but followed me out. He scored the horse a little about the parts with the lancets. The horse was swollen then. He was more swollen then than when I put him out. The inflammation had not completely abated before I put him out. Mr M'Kenna gave a ball to the horse, and left four balls with me for him. This was all in May. The horse lived from that Monday till Friday evening only. The horse took a violent purging after getting the ball, and the purging never ceased till he died. On Tuesday Mr M'Kenna came out and saw him. He was purging violently still. I had not gone in for him that day, he came out of his own accord. He took away the four balls which he gave me on Monday, and gave me four more of another sort. I pledge my oath he took those balls away. On that Tuesday he did not give any medicine. He told me to give half of one of the other balls. I did do so. I was to give it in oatmeal gruel I am not sure did I give it in Mr M'Kenna's presence before he left. I showed him the gruel when he came out again. The second sort of ball was given to the horse on Tuesday; it had no effect on him that I saw. Mr M'Kenna gave me no directions, but I followed out. The horse was ill on Wednesday. Mr M'Kenna did not come out to see him. I went in on Wednesday and saw the son. He told me his father had gone to Saintfield. I drove after him to the train, and just got there in time to see him get into a carriage and see the train go off. I left directions then for him to come out that night. Young Mr M'Kenna told me he would send him out. He did not come out. The purging was going on still. The horse was in the stable—in a loose box. He did not come out the next day until I sent for him. He then came out on Thursday at 12 o'clock. He asked to get flour gruel instead of oatmeal gruel. I got it ready, and it was given in his presence. Half of one of the balls was put in it. He left me then and went back for his instruments. He returned again the same day. He was not long away. He put setons in him. He did not give the horse anything. He saw him again on Friday. During all the time the horse was purging. Mr M'Kenna came back on Friday. He gave the horse a draught on Friday. The effect of that draught was that the horse would have destroyed himself if he had not been tied up. He would have tossed himself about the stable and destroyed himself. We had great trouble with him. In about two hours after he got the draught he became in that state. Mr M'Kenna left word that I was to go in the next day if the purging did not stop. It stopped that night when the horse died at twelve o'clock. I was to go in the next morning, and I did go, and told Mr M'Kenna that the horse was dead. Mr M'Kenna came out. The horse was partly skinned and opened by a butcher named Patterson. I asked Mr M'Kenna would he like to see the horse opened? He said —"Yes," and asked had I a butcher? I said—"Yes." Mr M'Kenna came out, and there was nothing done until he came. He asked what I was going to do with the horse? I said I would bury him. He asked when, and where the hole was? The horse was cut up into about twelve pieces and put in the hole. The butcher will tell you by whose directions. The hole had been dug that morning. Mr M'Kenna waited until the horse was all put into the hole.

Mr M'Kenna took two of the feet away with him, and the rest of the second lot of balls which he left with me.

Cross-examined by Mr Seeds.—Did not hear Mr O'Rorke state that it was Mr M'Kenna ordered the hole to be dug. I never spoke to young Mr Dinnen about this. The Messrs Dinnen never put it into my head to bring this action. I was not advised to bring the case by a young "vet." named Dinnen. It was on Saturday (May 4th) I got the horse cut. I was in the habit of getting Mr M'Kenna to attend to horses for me. I am not a dealer in horses. I took the horse in question away on Wednesday (May 8th). I was not then sober. I was not drunk. I was able to walk. I had a man with me to take away the horse. I called afterwards, and paid Mr M'Kenna the account. I put the horse out in the fields. There were two yearling mares in the fields with him. I did not tell Mr M'Kenna that I was going to put the horse out with mares. There happened to be more than one frosty night when the horse was out.

Re-examined by Mr O'Rorke.—Mr M'Kenna asked me if there had been flies in the field; and said the inflammation, he thought, was from the sting of a wasp.

To the Foreman.—Mr M'Kenna suggested the cutting up of the horse into pieces.

James Patterson examined by Mr O'Rorke.—The horse was not skinned; he was put in the hole skin and all. He was cut in pieces. He was cut by Mr M'Kenna's directions. I could not say into how many pieces. He was altogether swelled along the belly and sides, and putrified. Mr M'Kenna took away the fore feet. Mr M'Kenna waited until he was put in the hole. The hole was large enough to contain him without cutting him up. It was a deep hole. It was covered up that day. Mr M'Kenna waited until it was covered up. During the time I was cutting him, Mr M'Kenna saw the putrified places. He said he could not tell what the disease was. I swear he said that.

Cross-examined by Mr M'Lean.—After the horse was cut up, Mr Clements and Mr M'Kenna parted friends. The horse was cut up for the purpose of examination, and afterwards was put into the hole.

William Patterson examined by Mr O'Rorke.—I am in the employment of Mr Clements, the plaintiff. It was I went into Mr M'Kenna the Tuesday after the operation was performed. I did not see Mr M'Kenna that day. I am the young man who was at home. Asked him when the horse could be removed? He said any time Mr Clements liked. Another man, with Mr Clements, went for the horse. I was there the day after the horse died, when Mr M'Kenna came out. He ordered the butcher to cut the horse up in pieces. The butcher cut him up from the hind parts, and on up. He cut the head off, but not by the orders of Mr M'Kenna. Could not say how many pieces the horse was cut into. The hole was large enough for him without any cutting.

Cross-examined by Mr Seeds.—The butcher cut the head off to take it the readier out of the stable.

George Bell examined by Mr O'Rorke.—I am in the employment of Mr Clements. It was I who led the horse home on Wednesday (May 8th). Every care was taken of the horse up to the time he died.

Cross-examined by Mr M'Lean.—I did not see young Mr M'Kenna when taking the horse away. He did not tell me not to take the horse away. He did not speak to me on the subject.

John M'Dermott examined by Mr O'Rorke.—I am a veterinary surgeon. I got my diploma from the same college as Mr M'Kenna. I was listening to all the evidence in this case; I heard the witnesses examined. Was it proper directions that the horse should be turned out to grass so soon after the operation? It is all owing to the state of the parts. Was it safe to turn him out, as long as there was inflammation of the parts? Certainly not. Do I understand you to say it would be unsafe until the inflammation completely subsided? Yes, sir. Was it skilful treatment to lance him in the way described after he had been turned out? I could not say, not having seen the case at all. You heard the statement of the treatment? Yes. Can you say was all that judicious treatment? It all

depended on the nature of the case. Was it proper treatment to give purging balls? That depends on the nature of the case too; the purging might not have arisen from the medicine at all, but from other causes.

This witness was not cross-examined.

Mr King, V.S., Donegall Street, Belfast, having been called by Mr O'Rorke, said it was with the greatest reluctance he appeared in this case, as he did not wish to have anything to do in it, but he had been summoned to appear as a witness.

Mr Seeds said he had told Mr King that they would be glad that he appeared, inasmuch as Mr M'Kenna wished the case fully and fairly heard.

Mr King.—But for that, I would sooner have paid the fine than appear.

Mr O'Rorke.—Take the book, Mr King.

Mr King.—I must be paid first.

Mr O'Rorke.—Of course (to his clients), pay Mr King.

Mr King examined by Mr O'Rorke.—I am a veterinary surgeon. I heard the evidence in this case. I heard it sworn that Mr M'Kenna gave directions that the horse might be put out to grass in ten days; I presume, too, that it was ten days from the Sunday when the plaintiff saw him. At that length of time the horse could have been put out with the greatest safety. I may state, your Worship, that I have put out horses, under similar circumstances, in three days after being cut.

The Chairman.—I withdraw this case from your consideration, gentlemen of the jury. I dismiss the case. There is no ground for such a case, and no necessity to go into any defence.

Mr M'Kenna.—I have been put to great trouble and expense in the case, your Worship, as I wished it fully investigated. I have brought over Professor Gamgee from Edinburgh.

The Chairman.—I non-suit the plaintiff.

Mr Seeds.—Won't your Worship dismiss the case with costs? We have been put to expenses which we should be paid?

Mr M'Kenna.—I would beg your Worship to make one statement with regard to this horse. What has been stated with regard to carrying away the medicine is perfectly false.

The Chairman.—I cannot hear you now. I will say there is not the slightest imputation on your professional skill.

Mr M'Kenna.—Thank your Worship.

Mr M'Lean.—Your Worship will give expenses?

The Chairman.—I will.

Mr O'Rorke.—He could have got professional gentlemen without bringing them from Scotland.

Mr M'Kenna.—You had them all summoned for the plaintiff.

Mr O'Rorke.—There were veterinary surgeons to be had in Armagh, Londonderry, and other towns besides Belfast. I need not state that I suggested the propriety of bringing Mr King to hear the evidence; and having heard Mr King's testimony, I agree with your Worship that there is no blame to be attached to Mr M'Kenna; but the poor man has lost his horse.

The Chairman.—That is not Mr M'Kenna's fault.

Mr O'Rorke.—I agree with your Worship that Mr M'Kenna leaves the Court without any imputation on his professional skill; but this poor man has lost his £40 worth of a horse, and considering the satisfactory turn, for the defendant, which the case has taken, I do not think he ought to get expenses.

The Chairman.—I will certainly give expenses in the case.

Mr M'Kenna then stated what the expenses of Professor Gamgee were by train and steamer.

The Chairman.—Well, I will give £2 expenses and no more. I dismiss the case on the merits, with £2 expenses and costs.

INTERESTING HORSE CASE.

In the *Fife Herald* of Thursday we find a long report of an interesting and important case with regard to warranties, which we abridge.

At the Appeal Court held by Sheriff Mackenzie, at Cupar-Fife, on the 8th inst., the important horse case of Dunn *v.* Wedderburn was heard by appeal taken by the pursuer against the judgment of the Sheriff-Substitute.

Mr Nicholson appeared for the pursuer, Mr Dunn, farmer, Baldinnie, Perthshire; and Mr Welch for the defender, F. L. S. Wedderburn, Esq. of Birkhill.

Mr Nicholson stated that the pursuer had raised this action for the purpose of obtaining repetition of the price of a farm mare purchased by him at Perth market, on the 14th December, 1860, from Gilbert Gardiner, one of the tenants on the estate of the defender, and who acted on that occasion as agent for the defender in that transaction. The circumstances which led to the action were shortly these. The pursuer entered on the farm of Baldinnie, in Perthshire, at Martinmas, 1860, and was then stocking his farm, in doing which he had occasion to go to Perth market, where he could get farm horses to purchase, his father being along with him to assist him. Gardiner was also at the market with a grey or white mare, rising nine years old. His statement on that occasion was that he was there at the request of Mr Wedderburn, and selling that horse, as Mr Wedderburn was putting a pair of horses and a man off his farm of Birkhill. Gardiner asked L.30; and, without saying any more, as they thought the price too high, the pursuer and his father passed on. Shortly thereafter, the pursuer and his father came back again, and got into conversation with Gardiner regarding this farm horse; and at length a bargain was concluded, by which the pursuer bought the mare at the price of L.24. There were no parties present at the transaction but the pursuer and his father on the one hand, and Gardiner on the other. The pursuer paid the price of the animal, took possession of it, and that afternoon took it home to his own farm of Baldinnie. That evening when the mare went home, a trial was given as to her temper in the stable, which proved unsatisfactory. Then next day another trial was made with respect to her capacity for her work, when the mare kicked in the plough in the forenoon, and in the shafts of the cart in the afternoon. Again, on Monday, there was another trial with the mare in the cart, in going to the tile-work, when she again kicked and proved troublesome. The results of these trials having been different from the representations made by Gardiner at the market, the pursuer intimated to Gardiner that the mare was unsuitable, and would be returned. The mare was on the Wednesday following sent to Birkhill, and immediately returned to the pursuer's place of Baldinnie. In answer to the letter which the pursuer wrote to Gardiner with respect to the trials which the mare had got, Gardiner wrote that he did not warrant the mare, and, moreover, he could prove she was all he said. The pursuer was not satisfied with that. He wrote to Mr Wedderburn, the defender. Mr Wedderburn, in reply, stated that she was troublesome, and that she needed a cautious driver; and asked if the pursuer thought he would have got the mare so cheap had there not been something against her. The position taken by the defender was—first, that there was no warranty given; and, second, that the representation made by Gardiner was an untrue representation, or that there was really something against the mare. The pursuer having seen the defender taking that ground, was obliged to raise the present action for repetition of the price of the mare. The summons and condescendence to the relevancy, of which no objection was taken by the defender's agent or the Court, bore that the mare was warranted, or that there was a representation given. The defender denied that there was any warranty, and that he was not liable in breach of warranty, in respect that the mare worked well while in his possession. The Sheriff-Substitute found proved what took place at the market, and with respect to the trials to which the mare had been subjected, and also with respect to the character of the mare both before and after the sale to the pursuer, but he did not make findings with respect to the bearing of the law upon these facts. He did not find that these facts so proved were facts amounting, or not amounting, in law to a warranty, so as to

entitle the pursuer to return the mare under a breach of it. As to warranty, both the pursuer and his father state that the word "warranty" was never used on the occasion of the sale at all, and therefore the pursuer did not contend for that precise expression. What the pursuer stood upon was that Gardiner made a representation that the mare was fit for a particular purpose, being an excellent worker, which she turned out not to be, and that this in law amounted to a warranty. The Sheriff-Substitute seemed to suppose that nothing short of using the words "I warrant," or "Do you warrant?" established warranty under the law. Mr Nicholson thought he would be able to show his Lordship, by reference to authorities, that that was not the case before the passing of the Mercantile Amendment Act, or that any alteration of the law rendered it necessary now to introduce these words. With respect to the part of the general statement or representation, he directed his Lordship's attention to the 111th section of Bell's Principles, the title being "Special Warranties;" also to the 97th section of the same book. It is laid down in the 111th section, that affirmation of qualities constituted a warranty, and this was deduced from Scotch and English decisions. He also referred to the cases of Campbell against Mason, 29th January, 1807; Beddie *v.* Milroy, 17th January, 1812, page 695 of Baron Hume's book. There was also one decision, being the latest applicable to this case, which the Sheriff-Substitute had not taken notice of, and which he (Mr Nicholson) put great weight upon, as settling and governing the present case—Steele *v.* Scott, decided by the Court of Session on December 9, 1857, which was a case of the very same nature with the present. In that case the conclusion of the libel was precisely in the same terms as the present libel, and it was ruled that although the word "warranty" was never used at the sale, that representation as to character, on the faith of which a sale took place, amounted in law to "express warranty." Taking all the circumstances into account, he thought he had made out that the decision of the Sheriff-Substitute was not well-founded; and that Steele *v.* Scott, which was a case in point, settled the law in regard to the present action. The present case was the first that had occurred in Court under the Mercantile Amendment Act, and it deserved, as he had no doubt it would receive, the utmost consideration from his Lordship. If any alteration in this respect had been introduced by the Mercantile Amendment Act, it was of the utmost importance it should be authoratively laid down that the public might know it; and that future decisions must be regulated by the statute which proposed also in certain particulars to assimilate the law of Scotland with that of England.

Mr Welch then addressed the Court for the defender. He maintained that there was no express warranty, no special and distinct statement as to the purpose for which the mare was wanted, as demanded by Erskine in his Institutes, to constitute a contract. He further contended that the mare was a good mare, and that she had not a fair or sufficient trial before she was returned.

The Sheriff, in taking the case to avizandum, remarked that this was a troublesome statute, and had given rise to very many great and vexatious questions.

PERISCOPE.

THE ROYAL AGRICULTURAL SOCIETY'S HORSE SHOW AT LEEDS.

(To the Editor of the Times.)

Sir,—The entire thorough-bred horse is usually regarded in this country in connexion with turf speculation, and, consequently, commands only a moiety of public interest. We take the lowest view of his capacities when we look upon him only as a means of transferring so many hundred pounds from one pocket to another—a view neither true nor politic, and one which, if generally adopted as

correct, would still further lower the tone of a national amusement, which requires a great amount of whitewash to render it even tolerable. The fact is, that the English people are content to submit to the inconveniences of the modern system of racing for a great object. That object is the improvement of the breed of horses and the support of a prestige.

We are very glad to find that the agricultural meeting at Leeds proposes to put this matter on its proper footing. We are there to see the highest class of English thorough-bred horse put upon his trial—not as a racehorse, subservient to the interests of a single master, but as the propagator of his species, and of all the high qualities which we imagine to be inherent in good blood. In this view it becomes a great English question. The public has an interest hitherto unknown in thorough-bred racing stock; and, independently of our national pride, to every man who drives a pair of phæton horses, or saunters through Rotten Row from twelve to two on a high-priced hack, the question becomes one of more or less importance.

Now, there are two or three points affecting this case, and so keenly discussed at the present moment by sportsmen, that I may ask pardon for trespassing upon space so valuable as that of the columns of *The Times*. When we hear that there are no less than 125 entries for the horse show, and that they comprise some of the most fashionable and highest-priced stallions of the day, we can be hardly said to over-estimate the importance of the discussion. The question is this:—Will the object of the meeting be best attained by deciding upon the merits of the horse from the excellence of his stock, or from the physique of the animal himself? A *prima facie* view of the case would probably insist upon the excellence of the stock as a *sine quâ non* in arriving at a favourable judgment. The first object in awarding the prize is the benefit to be derived by the public. It can only be by the improvement of the breed of horses in this country. The first and highest legitimate vocation of a thorough-bred stallion is as a sire. As a sire he comes before the judge's eye, and as such he must take rank among his peers. He may not be perfect in form; he may have certain disqualifications on that head; he may lack fashion, or carriage, or substance, but if, like Voltigeur, he can claim to be the progenitor of the greatest number of really good horses of his day, the business seems all over but shouting. Nay, he may, perchance, be himself an infirm horse, like the Cure; but, if there be any credit due to the product of the Royal paddocks this year, he can scarcely miss a favourable verdict, more from the judge's experience than his eye.

This at first sight seems a very simple case, and the deductions from it clear and logical; but, upon a moment's reflection, a whole host of difficulties oppose this conclusion. First of all, notwithstanding the *dictum* of Abdel Kader in favour of the sire, how much or how little has the dam to do with the excellence of the foal; and this, especially when, from the reputation of the horse, all the best mares in England have been sent to him? The difficulty of decision in this case appears so obvious that it is but waste of time to dwell upon it. Or what shall we say of the impossibility to decide upon the excellence of the stock when the various qualities of each are to be taken into consideration—form, quickness, temper, or endurance? Whence is to come the mass of evidence so necessary upon these points? "Who shall decide when doctors disagree?" What again is to become of the claims of all the young horses, faultless perhaps in shape, but as yet untried, which give still every promise of adding to the already world-wide reputation of our English studs? A judge would scarcely feel himself justified in summarily dismissing such claims upon his attention, even though the established merits of such horses as Stockwell, Voltigeur, or the Cure, were in the scale.

Blemishes and imperfections, which do not detract from utility, present a serious obstacle to judicial criticism upon the subject. We do not speak of very decided cases, which may be put out of court at once, but lighter ones, in which there can be no possibility of transmission, and which only affect the animal in question. Anything approaching unsoundness ought, in our opinion, to be rejected at once, and this may be a reason why some of our eminent veterinarians should always

occupy a place on the bench. In fact, upon the face of it, there do appear certain difficulties in this view of the business, which would induce us to lean to the much more easy and more palpable task of deciding upon the merits of the horse *per se*, and which may include not only his structure, form, fashion, levelness, and general appearance, but even his temper, healthfulness, substance, or activity, and other qualities of which he is known to be possessed.

It is desirable, at all events, that some principle should be acted upon, and that the decision should be the result of some laws, rather understood than strictly defined. We believe that such was the case last year at Middleburgh, and that a decided tendency was exhibited to regard the entire horse as a studhorse only. The first and second prizes, if we remember rightly, were assigned respectively to Voltigeur and the Cure—remarkable, as we have above stated, for the excellence of their stock, though in themselves not having the impersonation of such extraordinary merit. The judges were selected with a due regard to a knowledge of the animal more, perhaps, as a racehorse than anything else. An eminent breeder of racing stock, and a well-known and extensive trainer, were aided in their deliberations by the real Rhadamanthus—a gentleman so closely connected with the turf, and yet occupying so peculiar a position with respect to it, that he must have brought to bear upon the question a very great amount of knowledge with the most perfect impartiality. It seems difficult for a great breeder to divest his mind of a partiality for certain blood; while a trainer, however eminent, will have some preconceived notions on the same point, and tolerably strong ones; but the referee ought to combine great knowledge with an unbiassed judgment beyond any other gentleman equally intimate with the business. He should be the very Epicurus of the turf, and regard all its pleasures as a stern matter of business and philosophy. We have already suggested that veterinarian knowledge should form a strong element in the judicial amalgam. We almost feel inclined to say, that two of the judges should be selected from the most eminent veterinary surgeons in England, and the third should continue to be chosen, as at present, from among gentlemen who have the most knowledge, with the least probability of prejudice, on such matters, the first to be the exponents of the principle, the latter the "'Ορθωτὴς τοῦ νόμου."

We plead the importance of the subject as an excuse for the length of our remarks. We are far from desiring to dictate to the judges, whoever they may be, what should be the basis of their decision; but we venture to call their attention to these points because the interests of not only our national sports, but of thousands of persons, are involved in a just view of the case.—I am, &c.,

SUB UMBRA.

Journal des Vétérinaires du Midi. July to October, 1860.

VI.—MALADIES OF THE FOOT; ITS MECHANISM. (*Extract from the Second Volume of* LAFOSSE'S "*Traité de Pathologie.*")

In the extract with which we are presented, M. Lafosse enters at some length into the functions of the foot. While paying a tribute of praise to our learned countryman, Bracy Clark, he takes the liberty of calling in question the correctness of a theory, which, first promulgated by him, was afterwards largely diffused among French veterinarians by the influence, more especially, of Huzard and Girard. The theory referred to is the expansion of the heels when the weight of the animal is brought to bear upon the foot. Lafosse records numerous experiments conducted by him upon living and dead feet, great care having been exercised in each case to have feet of a perfectly normal character, and so prepared that the whole circumference of the horny wall was brought into connection with the ground at the same time, precautions being at the same time, carefully adopted, lest the position, the condition of other parts of the limb, or any other agency, should militate against the correctness of the results.

As the result of the most careful measurements, conducted as above-mentioned,

and in the various positions of the foot, raised from the ground, and when placed upon that and supporting weight, the following conclusions were arrived at:—

1st. No expansion of the heels in a lateral direction takes place, though even more than the normal weight is brought to bear upon the coffin-bone, provided that the whole circumference of the horny wall inferiorly comes into direct apposition with the ground or the shoe. If, however, the walls of the hoof are rasped or cut away at the heels, so as to prevent that part coming into contact with the ground or shoe when the weight is brought to bear upon it, a slight expansion takes place, quite perceptible to the test of measurement. It is not to be imagined that the descent of the coffin-bone has a great tendency to expand the heels; this bone represents, to a certain extent, an unyielding hollow cone, while the sensitive sole, the plantar cushion, and the horny sole, frog, and bars, represent an elastic cone placed beneath the other. The obvious tendency of weight brought to bear on the inelastic cone must be, not to expand the other, but rather to compress it toward the centre, and to reduce its bulk. Such is accordingly the result, the plantar cushion and sensitive sole are much reduced in size, the spongy frog undergoes a similar change, and into its lateral parts it receives the superior border of the bars, so that the whole inferior part of the foot becomes more dense and compact. The basilar process has, however, a small part of the horny sole outside of it; this it cannot compress, as already mentioned of the others, this accordingly passes outward, and provided the heels are not in contact with a plane surface, a very slight expansion takes place. The strong and virtually inelastic parts connecting the horny wall to the os pedis effectually prevents any extensive motion in this sense.

2nd. If in an unshod foot the form be such that the frog comes in contact with the ground previous to the heels, on weight being brought upon that foot the heels will perceptibly expand. In this case the frog becomes a fixed point, and from its being compressed from above downward it expands laterally, tends to fill up the intervals between it and the bars, presses on the superior border of the bars, and by this means leads to a slight outward motion of the heels, which have been separated from their great cause of immobility—contact with a plane surface.

3rd. In the same way, when a stone or other hard agent comes in contact with the frog, and prevents the weight falling on the ground or shoe through the heels, these parts may slightly expand; in this case, as before, the natural elasticity of the frog and plantar cushion allowing these to expand laterally, injury or suffering in the parts which they cover is obviated at the same time.

4th. In contracted feet, with straight deep bars, an atrophied frog and heels turned in below, elasticity is entirely abolished, and pressure from above has a tendency rather to produce farther contraction. In flat feet, on the other hand, with very extensive frogs, and very oblique bars, the frog has a tendency to come into contact with the ground, and the weight on the heels being removed, slight expansion of these may be induced. In each of these abnormal conditions, then, there is a tendency to the aggravation of the previously existing defect.

5th. Shoes with considerable *adjusture*, and so thin that they will bend under the weight of the animal, become gradually wider at the heels, the foot, at the same time, undergoing a similar expansion.

VII.—Clinique of the Imperial Veterinary School of Toulouse. By M. Serres.

Salivary Fistulæ.—When these take place from the gland, they are generally curable by the simple application of a blister over the orifice. When again the fistula communicates with the duct, the same measure may succeed, provided it is of short standing, provided the canal of the fistulæ is short, and if the skin is little turned inward at its orifice. Should the fistula have existed for any time —a month—this measure will almost certainly fail. In a recent fistula with the canal pervious in front of the opening, hopes may be entertained of establishing the natural course of the saliva, by ordinary means, as blistering, slight compres-

sion, and sutures. When other means fail, success sometimes follows the ligature of the canal, as recommended by D'Arboval. This may require to be repeated once or twice, and when successful the gland becomes atrophied, that on the other side enlarging and performing its work. In the case of fistula from the gland, should blistering fail, cauterisation of the fistulous duct may succeed, the actual cauteries, or strong chemical escharotics, may be employed. The Professor sometimes conjoins with this, excision of the skin inverted into the opening and the application of sutures retaining little pledgets at each side, and upon the orifice. When all means employed are found to fail, removal of the gland has been practised, but only as a last resort.

Fracture of the Inferior Maxilla.—Under this head is related a case of fracture of the straight part of the lower jaw upon the right side, and which was successfully treated by a plaster of pitch, turpentine, and resin, the whole being enveloped in bandages. The animal was fed on farinaceous diet, and was otherwise well cared for, and in thirty days he was discharged with only a slight remaining callos around the injured part.

Iodine Injections in Inguinal Hernia.—A case of double inguinal herina in the dog was treated in this manner by Professor Lafosse. The injections were made at different times. On the left side the hernia was returned before injection, on the right it was not; in both cases the injection was allowed to remain in the sack five or six minutes. In each instance, a considerable effusion of coagulable lymph took place, with, on the left side, return of the intestine and obliteration of the inguinal canal,—on the right side retention of the intestine, and adhesion of its coats to those of the sack. Abscesses, subsequently formed in both sacks, and the dog was destroyed as incurable. The same means in a case of hernia of the uterus proved equally unsuccessful.

VIII.—Papular Malady, or Lichen in the Horse. By Messrs Marly and Causse, jun., 11th Chasseurs.

This is a record of a cutaneous disorder which broke out among the horses of the above-named regiment in the month of February, 1860, attacking animals of four or five years, and so lately brought into the regiment. Twelve horses in all were attacked, the malady showing itself in the form of a papular eruption along the superior of the neck, the withers, shoulder, back loins, and croup. The summit of the pimples was frequently denuded of hair to about the extent of a lentil, with in some cases a whitish pellicle, covering a concrete yellowish liquid. The pimples seemed to have their seat in the skin, which was thickened when they were placed, and in all cases there was a painful itching. This led the subjects to rub the tops off the papulæ, where they became covered by a grayish pellicle. It was unattended by fever or other obvious constitutional disturbance, and when of small extent generally, recovered in the course of a fortnight or three weeks; when very extensive, two months or more would sometimes elapse previous to recovery. Sometimes another eruption would occur, adding to the length of the affection. After the absorption of the liquid effused into the dermis, and the re-appearance of the hair, this last was darker than that around it. An incision made through the pimples showed the skin thickened, white, and infiltrated with lymph, but without evidence of increased vascularity.

None of the animals attacked had been over nine months in the regiment, and the disease was probably owing to alteration of their diet and regimen. There was no evidence of contagion, yet it was judged advisable to preclude the possibility of this by separating the diseased animals, and thoroughly cleaning and disinfecting their stalls and clothing. They were submitted to a mash diet of bran, boiled oats and barley, with a little of the ordinary ration. The medical treatment consisted of the application of a very mild preparation of cantharides, to which mercurial oiniment was added in certain cases. This led to a slight dessication, after which an alkaline lotion was employed. Carbonate of soda was given internally, combined with gentian when that appeared requisite. This treatment proved successful.

IX.—Vomiting, Cough, and Atrophy of the Left Lobe of the Lung, probably the Result of Injury to the Pneumogastric Nerve in Bleeding. By M. Festal, Veterinarian at Sainte Foy.

This is an interesting account of a cow which, after being bled, was suddenly attacked with difficulty of breathing, attended by considerable pain. This quickly passed off, but on food being swallowed, the pellets were invariably rejected by regurgitation. Liquid diet was prescribed with wine as a tonic, and in the course of a month, recovery had so far taken place that hay could be eaten, and rumination was, to a certain extent, restored. The cow was, however, affected by a cough, and percussion showed a diminished resonance of the left with an increase in that of the right lung. Considerable emaciation took place, and in the course of from four to five months the animal was in a state of hectic, the resonance on the left of the chest being confined only to a part of about the size of the hand in the middle of the ribs. By mensuration the left was found 26 centimetres less than the right side. About the end of the sixth month from the injury, the animal died, but we have no account of cadaveric lesions.

X.—The Use of Stucco for the Retention of Fractured Bones in Apposition. By M. Festal.

After using many agents for fractures, M. Festal has been successful in several cases in his employment of the above. The preparation used bore the following formula:—

Fine Plaster, q.s., to form a paste of the consistency of mortar.
Gelatine, 2 grammes.
Water 1000, do.

The gelatine is first dissolved in the water, and the plaster is then mixed with the solution.

Two cases are reported as treated by this means: the first was fracture of the horn of a cow; the second fracture of the tibia of a ram. In both cases a perfect cure was effected.

XI.—Excision of the Entire Uterus in a Cow. By M. Claverie, Veterinarian at Esparros.

M. Claverie adds another to the increasing list of these operations. In this case eversion of the uterus had taken place, while the placenta was still attached. This last was removed, the uterus carefully returned, a suture placed in the vulva, and a bandage ultimately applied. Calmative medicine was administered, and emollient injections thrown into the vagina. Four days later eversion recurred, the uterus being this time lacerated and otherwise injured, so that excision was determined on. In doing this a needle with a strong cord was passed through the matrix; the cords were tied firmly round each lateral part, and the uterus removed. Some bleeding taking place from the wound, a second ligature was applied below the last, which effectually arrested the hemorrhage. The lips of the vulva were then dressed, and the whole parts dressed daily with a decoction of hypericum perforatum and walnut leaves, to which was added a little camphorated spirit of wine. The fœtor was counteracted by the application of powdered charcoal to the parts. A restricted diet was enjoined. After ten days the appetite was completely restored, the secretion of milk became largely increased, and the animal returned to a state of health.

A VOICE FROM THE STABLES.

(To the Editor of the Times.)

Sir,—Allow me to call your attention to the very unhealthy state of many of the mews and stableyards of the metropolis, owing to the occupants at this season of the year being unable to get the manure removed as often as necessary. In the

autumn and winter, farmers send hay, swedes, mangold wortzel, &c., to London by their own horses and carts, and load back with manure; but at this period, and, in fact, in all the spring and summer months, they are so occupied getting seeds into the earth, haymaking, and harvesting, that they seldom send their teams to the metropolis, the hay arriving by railway. The consequence is, that during the hot months, when health requires that manure should be removed almost daily, we are for weeks encumbered with it, and when it is being carted away after remaining stagnant so long, the stench is overpowering, and I am confident must be prejudicial to society at large.

The farmers at this period not requiring manure, the London agents who purchase and transmit it by rail to different parts of the country have now little or nothing to do. This being the height of the London season, the city and suburbs are full of horses, and the manure consequently accumulates with rapidity.

I am a gentleman's coachman, living in a mews, and I can assure you I dread the approach of haymaking and harvesting. At the close of the summer of 1859, I was ill with typhus for three months, the effect, I believe, of inhaling so much poisoned air.

Much has been done of late years by the Board of Health, causing closets to be fitted up in stables, insisting upon a good supply of water, and in some cases improving the drainage and ventilation; but still more is required. They have posted notices at the various mews calling upon the inhabitants to get the manure removed at least three times a-week; but they have not furnished us with any means of obeying the orders; and how, I ask, under existing circumstances, are we to get rid of it? Give us means, and we shall be too glad to have it cleared daily. If by the aid of your powerful pen, the evil can be remedied, I and many of my fraternity shall feel truly thankful. I would humbly suggest, as an effectual way of accomplishing the object, that contracts ought to be taken in different districts for the continual removal of manure—the same as are done for dust, road dirt, &c.—I am, &c.,

WILLIAM HARWOOD.

No. 2, Roberts Mews, Hampstead Road,
24th June, 1861.

[Edinburgh might benefit by Mr Harwood's suggestion.—ED. *Edin. Vet. Review.*]

PREVENTIVE FOR HYDROPHOBIA.—Dr Rodet, late chief surgeon of the Antiquaille, at Lyons, having remarked that a solution of perchloride of iron, applied as a topic, was extremely useful in the treatment of certain disorders, was induced to try it also in the cow-pox, and found, as he suspected, that the perchloride destroyed that virus completely. Encouraged by these results, he determined to try its effect on the virus of hydrophobia, and with this view a series of experiments was made at the Veterinary School at Lyons, from which it appears that the solution of perchloride of iron destroys the virus of hydrophobia with certainty, if applied within two hours of the infliction of the bite. It is highly probable that the effect would be the same if the remedy were applied four, six, or even eight hours later, but this requires confirmation by further experiment. Admitting that Dr Rodet's discovery may be relied on, its importance cannot certainly be overvalued; for, although the actual cautery is exceedingly prompt, nay, instantaneous in its action, it is often difficult to apply it, either owing to the trepidation of the patient, or to the dangerous position of the wound; and, on the other hand, it may often be easier to find the solution of perchloride at a chymist's, in the country especially, than a skilful operator to apply the red hot iron unflinchingly to the injured part.—*Galignani.*

ERRATA IN JULY No.

At page 393, line 7 from bottom, read "anus" for "arms."
At page 395, line 13 from top, read "hocks" for "locks."

Fig. 1.

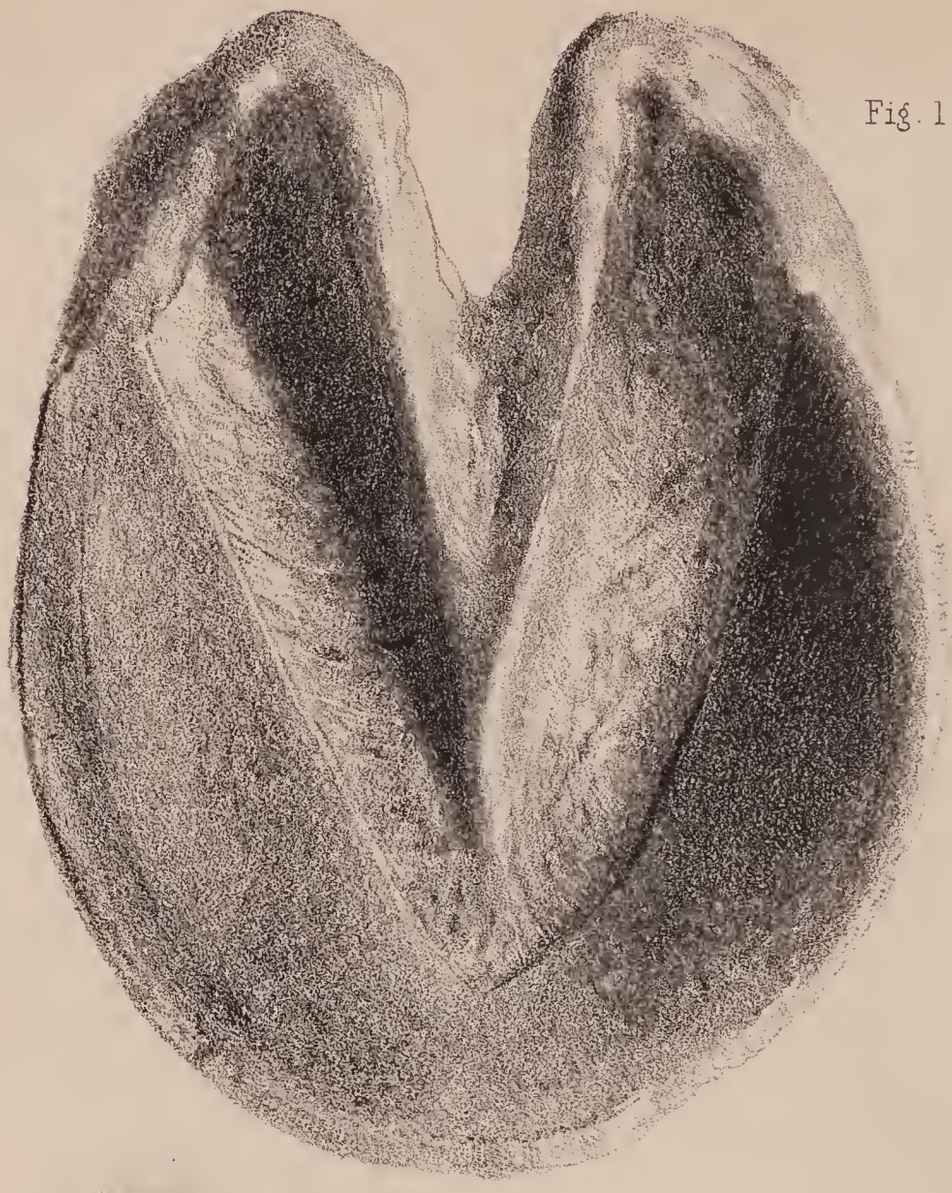
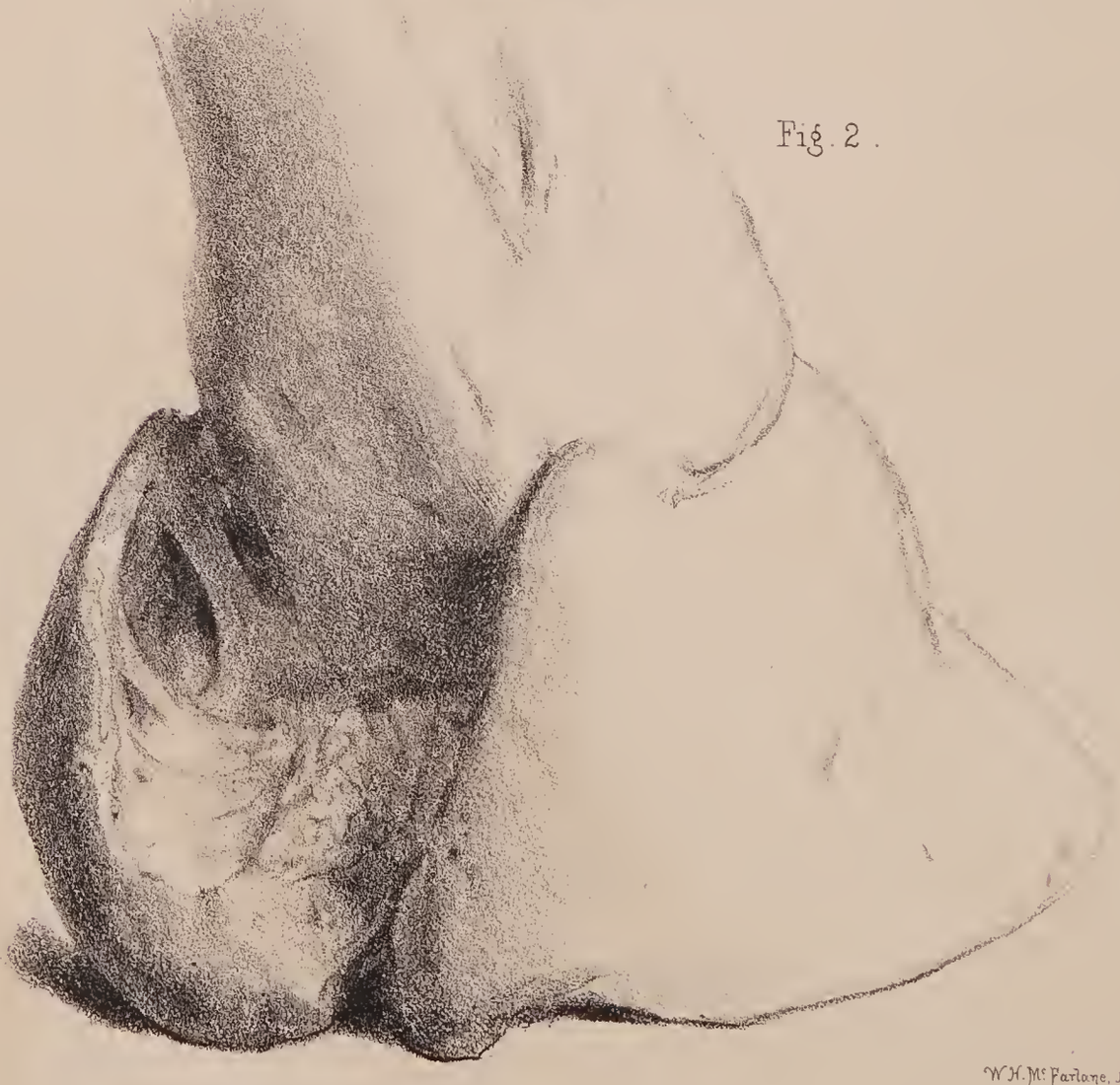


Fig. 2.



W.H. Mc Farlane, Lith^r Edin^r

THE FROG AND LATERAL CARTILAGES.

EDINBURGH VETERINARY REVIEW

AND

Annals of Comparative Pathology.

ORIGINAL COMMUNICATIONS AND CASES.

—o—

Lectures on the Principles and Practice of Shoeing, delivered in the New Veterinary College, Edinburgh. By Joseph Gamgee, Sen.

LECTURE IV.

The organs essentially concerned in the spring of the foot will form the subject of the present lecture. First in order of structure, and as intimately connected with the economy of the whole foot, is its sensitive covering, as presented to our view on removal of the hoof. This, at its several parts, presents different aspects. Uppermost, contiguous to the skin, is the cutidural band; next to it the laminated surface, which connects with the wall, and forms the strongest bond of union between the sensitive foot and hoof. We now observe the velvet-like surface of the sensitive sole, and the smoother texture of the exterior of the sensitive frog. These parts, so diverse in appearance and texture, are all traceable as a continuation of the true skin, which, forming a cul-de-sac, embraces the whole with the most beautiful adaptation to the varied purposes of each part. The whole surface secretes horn, and each part furnishes a kind differing in texture and physical qualities to the other. So important are the functions performed by the parts under consideration, that we can no more pass them without due notice, than we could the hoof or any of the other organs hereafter to be noticed. Taking the covering of the frog, for instance, we find it so intimately interwoven with the fibrous texture which it covers, that, unlike membranes formed in layers, the secreting surface of the frog is not easily divisible, but forms, and that at its anterior part especially, a firm external fascia, which binds down the organ to the ligamentous structure above, presently again to be noticed. Looking at the sensitive sole, we find it looser in texture, forming a reticulated fibrous substance admitting blood-vessels of larger calibre; the surface of bone on which the fibrous sole lies is comparatively smooth; then looking at the anterior convex surface of the same bone, we find it, as we have described it to be, rough,

unlike the plantar or bearing surface; it is fitted by its roughness to be a strong attaching surface, over which we find the laminated texture distributed; and again in this part we find great provision for the passage of blood-vessels, and the free circulating function.

Pursuing our researches into the varied structures which are enveloped in the afore-named textures, designed to impart spring, ease, and power in the movements of the horse; we find those occupying a space in the hoof posteriorly, are composed of cartilages, of the fibrous frog, the ligamentous and other yielding tissues, with the blood-vessels, filling up the space bounded by the cartilages laterally, and by the flexor tendon anteriorly. In describing these structures separately, I shall endeavour to lead to an understanding of their functions collectively, and furthermore to illustrate the action of the parts of the foot, the structure of which we have already considered, viz., that of the hoof, bones, and joints; being convinced, as I before told you, that we cannot profitably study the function of each organ separately, unless we proceed to examine them as a whole. The cartilages to which brief allusion was made in our description of the bones, we shall take first in order.

Deviating from descriptions usually pursued, and which to some extent I have previously adopted in teaching, I regard, and shall describe, the cartilages as two, one on either side of the foot. These, commonly called the lateral cartilages, have had assigned to them different terms, to indicate different parts. Bracy Clark speaks of them as the superior and inferior cartilages, the first description applying to that part situated above the margin of the wall. We may adhere to the plan of speaking of them as posterior and anterior parts. The whole is continuous; and so we purpose describing them. The cartilages are attached to the coffin-bone posteriorly and laterally, taking their origin at the upper and extreme point of the retrossal process, where they are intimately blended with dense reticulated fibrous tissue. Passing anteriorly, the cartilage is strongly attached to the scutiform or basilar process of the coffin-bone, and still more forward, is blended with the ligaments imbedded in cavities of the coffin and coronary bones, and this strong attachment receives considerable addition and protection from the lateral cartilages, which, passing over, terminate contiguous to the broad insertion of the extensor tendon. The chief bulk of the cartilage is situated below the upper margin of the wall. There is, however, a distinct portion continued above the hoof, that can be felt, and which, besides other essential functions, gives symmetry to the foot, and in the healthy state is nearly as pliable as that composing, and giving form to, the horse's ear. Proceeding in our examination of the cartilage posteriorly, we have to notice structure and functions hitherto little understood Parallel with the scutiform processes of the coffin-bone are the two extremities of the navicular bone, which, as we have said, is placed transversely across the centre of the foot. It is to the inner surface of the lateral cartilage, at the point where the

scutiform process of the coffin-bone rises, that ligamentous fibres from the extremities of the navicular bone are attached. It is apparent that the intention of nature in raising up these two lateral columns, was to form strong supports, between which the navicular bone was to be suspended, admitting a descent in conformity with the degree of motion allowable by its attachment to the coffin-bone; and more especially as it is pressed on by the coronary bone, and elevated by means of the two strong ligaments, which, rising from either end of the navicular, are attached to the lower end of the pastern bone. Posteriorly and laterally, the whole internal surface of the cartilage is an attaching medium for strong ligamentous texture, forming cords, varying in size, which may be distinctly seen, and which, running inwards, form a part of the elastic network which was well noticed (and in advance of the time he wrote) by Bracy Clark, and more recently by M. Bouley and other continental writers. The cartilage blends posteriorly and superiorly into the frog, the latter organ at this part being composed of a texture of dense fibrous substance, hardly distinguishable to the touch from ligament and cartilage, or a combination of both. The cartilage is covered by a dense cellular membrane of considerable substance, externally by the skin at its upper part, by the cutidural band, and by the wall at its lower part; it is, however, its internal, inferior, and posterior parts which call for more than ordinary notice from me at this time, and to a further consideration of these, I must return as I describe the structure and economy of what is ill understood by the term 'frog.'

The Frog—the English term by which part of the horse's foot is familiarly understood—is a most important organ. No part of the foot, nay, no part of the horse, has given rise, during the last sixty years in England, to so much earnest discussion, so much diversity of opinion, and so much fallacy in practice as the frog. The sensitive structure exposed to view on removal of its triangular horny covering was called by Coleman "the sensible or fatty frog," the latter term implying his notion of its composition. Bracy Clark, penetrating more accurately into its real structure, declared that it contained no fat, but was made up altogether of a different fibrous substance. There was no approach to correctness in either one or other of these notions, though, to go into the whole truth, Clark did see clearly much of the structure, and understood some of the functions, with his characteristic philosophic views.

Looking at the frog in the living horse, I have nothing to observe about the definition; the term is capricious, but long usage has rendered it intelligible; coming to the anatomical description, I find the case different. The frog is not a distinct and separate organ, but is, on the contrary, structurally a continuation, and functionally the complement, of adjacent parts. The result of the combined arrangement is perfect organization and harmonious action. I have already remarked how the lateral cartilages on each side merge into the frog; where the structure becomes one of firm, tough, ligamentous consis-

tence, such as resists all but the sharpest instrument to cut, and which, by no ordinary means, is divisible, so interlaced are the fibres of which it is composed; these form the parts of the frog on either side of the cleft, which, as all know, divides it in its centre posteriorly. The fibres, the bulk of which run anteriorly into what is familiarly known as the point of the frog, are strongly attached (and much more strongly than I can convey an idea of by writing) to the coffin-bone, and to a strong web of fibrous tissue which intervenes between the frog and the insertion of the flexor tendon.

The apex or point of the frog (a part that has given rise to a diversity of dogmatic opinions) is raised into a buttress, against which its posterior elastic parts act. It has been said that the office of the point of the frog was to protect the flexor tendon and the joint capsule immediately above. Coleman, confuting this notion, said its use was to plunge into the ground, and act as a stop to the horse. With regard to the first supposition, that is refuted by the answer Coleman gave, viz., that the frog only extends over a little more than a third of the space which the joint capsule occupies, and I will go farther and say, that instead of a protection, a hard body such as the fibrous insertion of the frog is, raised into a prominence in the centre of the foot, would prove a source of injury if it came in contact with the hard ground; but provision is made against this: and here I wish to submit a few farther remarks on the way the frog is inserted.

In examining its insertion we are struck by its immense strength, consequent upon the tenacity and intricate interlacement of the component fibres, and the extensive surface on which they are implanted, spreading out like a fan over and into the under surface of the coffin-bone. I have no hesitation in declaring, as my belief, that the office of the point of the frog is to form a fixity, against which the two lateral halves posteriorly are constituted elastic springs, each half acting separately and independently, or both together, according to the ground on which the horse moves, whether it be level or more or less uneven. Returning our attention to the strong fibrous bed that is stretched across the posterior and inferior part of the coffin-bone, this we shall find, from its texture, substance, and position, is designed to obviate all concussion to the delicate structures above; an elevated crest dividing the two cavities of the coffin-bone affords the strongest attachment for that fibrous floor; thus, the joint capsule under the navicular bone is so admirably guarded, that no pressure from below can be conveyed to the tendon and navicular bone.

The fibrous structure, the economy of which we are considering, is not limited to the prominent ridge observable in the bottom surface of the horse's foot when lifted up; it extends across the whole posterior bottom half of the foot. The fibrous frog, with its outstretching lateral parts, may not inaptly be compared to a bat with its outstretched wings, the head representing the buttress or point, the body, with the wings, representing the bulky elastic part of the frog,

with the outstretching fibrous web attaching it to the coffin-bone and lateral cartilages.

The accompanying illustration exhibits a posterior and internal view of this fibrous structure and one of the lateral cartilages, the elastic fibrous fatty tissue having been dissected away to exhibit the frog with its connections, and also the distinctly visible ligamentary cords, which have their attachments with the cartilage internally above, and descend obliquely inwards to be inserted into the strong fibrous web before alluded to. This illustration serves to show how the whole is connected; we find that there is a double connection in this ligamentous structure, the uppermost fibres, running across, connect the one side of the foot with the other, the others are interwoven with the fibres composing the frog, so completing the whole connection.

The yellow fibrous fatty tissue which, as has been said, has been dissected away, is that which Coleman mistook for the frog, when he called it the fatty frog; and is what Bracy Clark mistook or ignored, when he said there was not a particle of fat in the composition of the frog. Anatomically considered, this fibrous adipose tissue appears distinct from the strong and harder fibres which compose what we are describing as the frog; they are, however, intimately blended in structure and allied in function; this pliable texture seems to be destined by nature for an office somewhat analogous to the cellular adipose tissue which is placed in the orbit behind the eyeball; in both cases their office seems to be to fill up and form an elastic bedding, and so performing an important part in the organ's economy.

The fibrous fatty tissue is softest in the centre, that is, taking a line through the centre of the frog's cleft to the skin above, it becomes more distinctly fibrous in its outer attaching parts with the cartilage and other fibrous textures. It is in a direct line through the centre of this fatty substance, from the centre of the cleft upwards, that veterinary practitioners were instructed at the London school to thrust a steel instrument called a frog-seton needle, the act constituting what was by perversion of language called a surgical operation; it being one of those cruel procedures which has augmented the sufferings of thousands of horses, but never conferred good on one.

Whilst on this organ, we may briefly notice a part of the frog to which Bracy Clark gave the name of the frog-stay. As I do not entertain the same views as Clark did of the office of this structure, neither do I see that it required a distinct name. I believe in no special function of this duplicature of horn, for it is nothing else; the cleft or depression in the centre of the frog posteriorly, results as naturally in the foot of the horse as does the division of the cloven-footed animal into two claws anteriorly. The foot of the horse is naturally divided posteriorly in its centre, where we find a marked depression, and call it the cleft of the frog, it being bounded on either side by the strong fibrous structure already described. The

horn of fine elastic texture which covers the frog necessarily takes a duplicate form. I see no other design in this formation than that of the horny covering following the part to be covered; our skin doubles in the same way between our toes and fingers. In the natural, well-formed, unshod foot, the substance and texture of this duplicated horn is less rigid than we often find it in some morbid conditions of the foot. Cases are constantly recurring to me in which the foot, jarred and contused, presents an unnaturally tense, tumified condition to the touch. In some of these cases I believe that this duplicated horn may temporarily increase that condition, not necessarily as a cause; and I further believe that in that morbid condition of the frog which we call a thrush, which is essentially a breaking down of the frog at this part, that it is one of nature's resources for relief, the compressed and progressively-wasting condition of the foot requiring the absorption of some parts, and the casting off of this. In these workings of nature's laws, alteration of structure and form are constantly going on.

I have now to state views which I entertain, altogether different from anything I learned at our veterinary school. I have to make statements which I have put off for a while; first amongst these, I say that the foot does not expand when implanted on the ground, and that no such function as an alternate widening and narrowing, expansion and contraction, or whatever else imagination set forth and called it, takes place in the horse's movements. This much in the economy of the foot, I have long since seen, have taught it, and adopted it as a guide in practice. I have also seen why the foot *should not* widen as the horse imparts his weight to it, but I have only recently arrived at the understanding, and that after many years of step-by-step exploring and advancing, why it *cannot* expand. That there was no lateral widening of the heels became manifest to me through examining the shoes of horses after they had been three or four weeks worn with the animals at work; there was always observable a bright longitudinal line where the wall bears on the shoe, for the space of an inch or more from the point of the heel on either side. With race-horses in training, this line is more marked than in that of any others; the iron is not only polished by the friction of the hoof, but a deep furrow, in many cases, is worn into it. In carefully examining many hundreds of such cases, not one gave the slightest indication of a lateral motion, unless in exceptional cases, where the shoe was loose and moved on the foot; the line of friction always corresponded to the width of the wall at the part. Other facts in support were brought out by perseverance and observation. Having arrived thus far, I stopped to inquire Why should the foot expand? How would such a function harmonize with others, and other conditions? On applying such a test, the whole fabric of the old teaching broke down. I at once saw that this imaginary function of expansion could not be a real one; it is incompatible with natural laws. Our old veterinary school teaching says

that the foot widens at the heels and quarters every time it is brought to the ground, and when the weight of the animal is thrown on it; thus it was to be understood that full expansion only took place when the full proportion of weight distributed to one foot was thrown on it. The wonder to me is, how such notions as the foregoing sentence exhibits should have ever got into the head of any physiologist. If there was any such cross function as that of a horse bearing hard on the ground and so pressing open the foot, it would involve a trituration or grinding away of the horn, greatly in excess of the means of reproduction. Throwing to the wind the old hypotheses of contraction and expansion, let it not be assumed that I underrate the mobility and yielding properties of the horse's foot; these, I know, are beautiful in kind and extensive in degree, such as no description is adequate to pourtray. The action of the foot is a rebounding action, not one of a slipping out of its lateral parts. Having arrived thus far in my subject, I continued to investigate the anatomical structure of the foot and limb, and to learn the functions of different organs separately and together, until I saw that the foot cannot expand or bulge. I find that nature has made provision to obviate such a movement. And here the intentions of an all-wise Creator are as obvious to human understanding as the work of an architect who throws girders across a building to prevent its walls parting. When I see the way that the foot in its posterior region is braided or laced together by ligamentous, cartilaginous, and non-elastic structures, so that no divergence of the parts can take place, but, on the contrary, concentration would seem more possible, I turn to the investigation of other structures. I look at the position of bones, ligaments, and joints, and seeing their movements, I find that the knowledge acquired of the one supports what was already understood of the other. I then look to the way the weight is transmitted through the whole limb, and each new investigation makes the subject plainer. I now return back to the hoof; in some aspects, I had conceived that the pressure on the navicular bone downwards received through the coronary bone, and the ground pressure from below, bending the posterior part of the foot upwards, had a tendency to draw the lateral cartilages inwards; and where do I find the provision to obviate this? Why, in the beautiful structure of the hoof; this, we say, is the covering given to protect a complex, delicate organism; but the protecting part is no less beautiful than that which it protects; they are all of one design, as the skull protects the brain, and anything that affects the one does so to the other; so is the relation between the horse's hoof and the parts within it.

I may briefly recapitulate that the hoof is composed of and divisible into three distinct parts: the wall is strong, fibrous, and elastic, and embraces the foot; the sole fills in the bottom surface, forming a floor; it is made up of flakes of horn, and is of considerable thickness,

strongly cemented with the wall anteriorly and laterally, and is connected and embraced in its inflexions posteriorly; it is concave externally; it is this body that to a great extent has the power of regulating the form of the hoof, in conformity with the requirements of the whole foot; without the sole the wall would collapse on to the parts within; the horny sole possesses some of the properties of an arch, only partially so, as Bracy Clark observes, through its being divided posteriorly, by which means a degree of motion is allowed. Another source of strength is given to the bottom of the foot, by the wedge-like way in which the pyramidal point of the horny frog is inserted into the bottom centre of the foot; thus the sole, mainly, though supported by the harmonious action of the horny frog, is the chief means provided to obviate the collapsing of the hoof, so as in any way to interfere with the functions of the structures contained. The above description applies to the horse's foot in its normal state; unfortunately, amongst horses of all classes, such is the prevailing mismanagement, that nature's laws are very generally violated by misapplied art; of this we shall say more when treating of shoeing and diseases of the foot.

Explanation of Plate.

Fig. 1. The Frog, indicating its connection with the lateral cartilages and the radiating fibres which attach it to the os pedis and fibrous web.

Fig. 2. The ligamentous bands attached to the inner side of the lateral cartilage, and which connect, through the frog, the two lateral cartilages together.

On the Positions assumed by the Feet of the Horse in Progression.

By R. H. Dyer, Waterford.

(To the Editor of the Edinburgh Veterinary Review.)

Sir,—A short paper with the above title is found in your present month's impression, signed "James C. L. Carson, M.D." Having for many years paid considerable attention to the movements of the horse, and made myself *up* in every thing (as far as my humble capabilities will admit of) with reference to the positions, movements, and peculiarity of action assumed by the horse whilst progressing, I had never anticipated reading such remarks as are found in this note, especially from a gentleman apparently so capable of forming an opinion as I believe Dr Carson to be. Mr Lupton's paper I know nothing about, nor have I had the pleasure of reading Dr Carson's work *On the Form of the Horse, as it lies open to the Inspection of the Ordinary Observer;* I must, however, dissent from the views that gentleman has taken of the position, &c., assumed by the horse, &c. The doctor asks, What great difference is there between a *man* and a horse, that should make such a difference in *their mode of progression?*—and secondly, When will common sense become universal? These two important questions are somewhat easy of solution, especially the latter. I will

deal with them as they appear upon paper. In the first place, man is *erect,* and walks with *two* legs only; a horse is placed *horizontally* upon the ground, and is obliged to use all four legs in progression. I need not, I am sure, take too much space in descanting upon the difference, not only of structure, but of position, between a biped and a quadruped, as it seems so patent that I am almost induced to pass it by without remark; but perhaps it will be considered necessary to prove my position, which I will endeavour to do speedily. The foot of man measures about from 10 to 12 inches in length; all the joints are placed forward in front of the body in which the various movements occur; the heel, as a general rule, is the first part of the foot to take the ground (this is a *natural* act—the appearance of the heel of a boot after a month's wear will demonstrate it); but, with regard to the horse, there is, I consider, much difference. In the present paper I will not go into anatomical detail, but content myself by drawing your attention to the fact of the bones of the leg and foot of a horse, forming a pillar of support, and during progression the feet are acting as props or supports for the body at large. His movements are not like those of the giraffe; this latter animal makes supports of his *hind* legs chiefly, not his front ones. Consider for a moment the situation of the bones of the foot and leg of the horse. The movements of the foot are produced by the various extensors and flexors of the limb, which are found chiefly at the upper part of the radius, although modified to a certain extent by muscles situated above the radius. I well remember what Professor Spooner used to call the *Levator Humeri,* viz., nature's bearing rein; and, if I don't forget, this muscle has a hold upon the humerus which induces the action of the leg to be high, so that the true or real extensors of the fore-leg have an auxiliary power given to them by this muscle. The *obliquity* of the scapula has been from time immemorial considered as essential to the good action of a horse in progression; this bone, and, of course, the muscles in its neighbourhood, are brought more into action in the gallop than in the trot; and it is more important to have the obliquity in race-horses than in carriage-horses, although I admit they are handsomer than mutton-shouldered animals. I have often heard men, who are looked upon as good judges, say a horse has an oblique shoulder when it is pretty straight, &c.; they don't take into account what a difference of action is caused by merely one inch either way—a quarter of an inch in a mechanical thing such as the skeleton of a horse makes more difference than many of us imagine. A *development* of muscle will have more to do with *high* action than the obliquity of the scapula. I have many a time examined plain horses with straight shoulders, and with what is known by *mutton shoulders,* and have found their action brilliant, as considered so by persons fond of high steppers; but, to prove that the heel of a foot reaches the ground *first,* has not to my satisfaction been done by the worthy doctor. I flatter myself I can show that the foot is placed down *flat* upon the ground "naturally," not either heel or toe. The foot of a horse measures from

toe to heel about from 5 to 6 inches. It is not *necessary* that the heel should grasp or touch the ground first; the structure and position of the foot and leg do not warrant us in assuming that such should be the case, but the reverse. The foot of man, with 10 to 12 inches or more, standing before the rest of the body, is very likely to have the nearest part to the body come into contact with mother earth first—not the toe; although I have seen persons walk upon their toes, and never upon their heels at all, this does not prove that the action of such persons is natural. Again, I have seen many horses place the heels upon the ground first; "down hill especially is it required;" it may be asked, how is this to be accounted for? In pommiced-footed animals, or when the laminated structure has been involved in disease, the action is so changed that in almost all cases the heel first touches the ground, but not otherwise, on a level road. Observe a shoe after a month's wear—are the heels worn more than any other part of the shoe? No; the *toe* is more worn than other parts of the shoe. This is done, not in going down, but in being taken up, unless in heavy draughts; then the toe reaches first, and is much worn. The attrition is great—very great—in the act of taking the foot up. I think, if a horse were to place the heel upon the ground first, we should find more cases of injury of the tendons than we usually see. Calf, baker, or back-kneed horses are certainly more inclined than others to this kind of action than horses with what we consider well-shaped legs. If Dr Carson will visit a forge, and carefully examine all the shoes which are removed for the next six months, I think he will be likely to alter his opinion in some degree. The subject is one requiring more time than I can devote to it just now. At some future period I may perhaps revert to it, and enter more into detail.

With regard to the second question, my reply is, Never.—Yours, &c., R. H. Dyer.

Waterford, 12*th August*, 1861.

[Mr Dyer has taken up this question with his usual zeal, but he appears not to have read much that has already been written on the subject, not only by Messrs Carson and Lupton, but by Mr Gamgee, senior.—Ed. *Edin. Vet. Review.*]

Imperforate Anus. By A. C. Muir, M.R.C.V.S., Dunbar.

On the morning of Sunday the 31st March, 1861, I was called to attend a foal, the property of Captain Hunter of Thurston. A mare had foaled during the night, and the foal indicated at once severe disturbance. I found it suffering from colic, and immediately administered a dose of medicine. I tried to give an injection, but found

that the liquid would not pass in, and was expelled forcibly as I poured it into the rectum. This led me to suspect a firm impaction of meconium in the large intestine, as foals are often subject to this complaint, and not unfrequently die from it. The colicky pains persisted, and the little animal became deathly cold. I had it rubbed, applied blankets, wrung out in hot water, to the abdomen, and signs of relief appeared; but shortly the spasms returned. More purgative medicine was given, with the effect of allaying the pain for a time, and I repeated the injection, but with the same result as before. It died at four o'clock on the Monday morning, without having been relieved. On opening it, I found that the rectum at its anterior part was impervious, and no passage through it had ever existed.

[Cases of imperforate anus are not frequent, but care should be taken, in all cases of severe constipation in foals, to ascertain the existence of this deformity. It is often very apparent, but in others, as in Mr Muir's case, there is evidently much difficulty in forming a correct diagnosis. When no meconium has passed at all, it is a very fair indication of intestinal deformity in newly-born animals, as in the severest form of constipation there are always some small masses of excrement voided. We had mislaid Mr Muir's letter, or the above interesting case would have been inserted sooner.—Ed. *Edin. Vet. Review.*]

Splenic Apoplexy. By John George Dickinson, M.R.C.V.S., Boston, Lincolnshire.

I was requested by Mr West of Wigloft to visit his farm, and see a dead bullock that he supposed had been poisoned. There were nine more very bad, presenting upon my arrival the following symptoms: violent spasmodic twitchings of the whole muscular frame; arched back; great weakness: staggering gait; feculent matter, tinged with blood; colicky pains, indicating abdominal disorder; in some cases (the more advanced), the urine coloured red; prostration seemed so great that they took advantage to rest anywhere convenient; pulse quick and feeble; accelerated short breathing; occasional moan; lie down, but soon up and try to eat.

In the same neighbourhood, the stock of another farmer was seized with this complaint, and it was called diphtheria on account of a copious, frothy discharge of the nostrils, and ropy saliva from the mouth. I believe this gentleman lost nine good bullocks from this so-called *diphtheria.* Splenic apoplexy, like most other blood diseases, causes great and speedy ravages. It is a blood disease, evidently, from the suddenness of its attack and rapidity of death; we have a rapid accumulation of

blood—extravasations of blood after death in many parts prove this—especially the spleen. This organ in the three post-mortems I have found greatly enlarged, and one spleen weighed 16 lbs., and ruptured from the great engorgement of blood in its tissues. I believe the principal cause of this disease to be that of trying to outdo the laws of nature by the process of artificial feeding, and the artificial way of preparing the food. For instance, poor steers are brought from the fields into the crew-yards; pulped mangolds, cut straw, the best of cake given—in fact, everything to push the functional laws of nature to their greatest test.

Treatment.—In the first stage—viz., that of loss of appetite, with little or no staggering gait—bleed, but very cautiously ; some will bear two quarts, others four. In the advanced stage, they would not bear a pint. Give purgatives, a powerful stimulant, followed with salines, and ablutions of cold water seem to invigorate; but, above all, remove all food for 48 hours, then begin with bran mashes. Purgatives give relief, and with that you have the dung free from the blood observed during the disease.

The nine animals recovered, The next month I was also requested by Mr Ward of Bunkers' Hill to examine, post-mortem, two beasts. Having died suddenly, they were supposed to be poisoned. I told him the symptoms they would have presented if I had seen them, which at once set his mind at rest. He had thirty more beasts in the same yard, which presented the same symptoms, varying slightly. Some of these were in a state of stupor upon my arrival. The same treatment laid down in the former case was followed out, and not one died.

Case of Impaction of the Ileum. By Richard Poyser, at Messrs Cope & Poyser's, Veterinary Surgeons, Ashbourne, Derbyshire.

About one o'clock on the morning of the 29th January, 1861, we were called to attend a black cart filly, rising four years old, belonging to a small farmer, who stated that he had used her the previous day to assist in drawing a load of coals a distance of three miles, over a road the greater part of which was rough and hilly, and that he perceived her to sweat more than he thought she ought to have done. On getting her home he perceived she was decidedly unwell, dull, off her feed, and with an expression of uneasiness. Thinking she had the gripes, he walked her out, and gave her a little pepper and ginger, which did not in the least relieve her; about midnight he sent for the farrier or village blacksmith, who bled her, but administered no medicine.

On our entering the stable, we found her standing with a dull, dejected countenance, hanging her head, and with symptoms of pain, apparently abdominal; the pulse was of a quick, soft, fluttering, and debilitated character; the schneiderian and conjunctival mem-

branes were of a pallid hue; the mouth hot and dry, and the extremities of a medium heat; for two hours after our arrival she frequently evacuated dung in small quantities, which was soft, black, and of a disagreeable fetid odour—after which the expulsion of fæces was completely suspended.

Owing to the negative indications of the seat of pain, and positive information that the animal, for the past two months, had been living upon coarse, indigestible food, and the obscureness of inflammatory characteristics in the pulse, we conjectured that the case was one of impaction of food in the intestines, rather than an attack of acute enteritis. In conformity with the foregoing diagnosis, a draught composed of sol. aloes ℥viii, tinc. opii ℥iii, nit. æth. ℥i, was administered, as well as a ball composed of opium ℥i, submur. hyd. ℥ss; her body was clothed, and her legs hand-rubbed and bandaged, and a comfortable bed allowed.

There was no alteration in the pulse until about five A.M., four hours after our arrival, when it became quicker, fuller, and of a decided inflammatory character, whereupon seven or eight quarts of blood were abstracted. The pain continuing and increasing, the opium and calomel ball was repeated, the region of the abdomen scalded, she was back-raked, and enemata thrown up every two hours. At nine A.M., the symptoms were unabated, the opium and calomel were repeated in solution, the abdomen was again scalded. Towards ten A.M., the violence of the symptoms had somewhat diminished; she lay down and became composed, but did not long enjoy this ease, for, about eleven, the pain returned with double fury; the pulse seventy, small, and irritable; the breathing slightly quickened; she would now roll on her back, kick her belly, and plunge violently. Another opium and calomel ball was administered, she was back-raked, clystered, and kept warm, her clothing being repeatedly thrown off. It was now that, from every appearance of the animal, our prognosis was unfavourable.

There being no amendment during the day the following draught was given about four P.M.:—Tinc. opii ℥iii, tinc. ext. belladona ℥iii, op. amm. arom. ℥i; again the abdomen was scalded for the third time, all of which did not take the slightest effect. Gruel was offered but was refused. At eight P.M., the pulse had risen to eighty, small, running, and indistinct. From this time the pain seemed to concentrate in a great measure in one place; an abatement of the general symptoms of inflammation occurred, and the chief symptoms became a regular pawing of the ground, and occasionally walking round the box. She now also began to swell about the flanks, which were heaving violently, now and then casting an anxious look at either, and evincing considerable pain upon pressure. During all this time no fæces had been evacuated, the rectum remaining empty, hot, and dry; the functions of the urinary organs were entirely suspended, no urine having been discharged except by the catheter. At midnight, the pulse, which about ten o'clock was 87, had almost reached 100,

the breathing to 60; she pawed and paced the box as before, and at intervals would lie down, roll, and plunge desperately. By nine A.M., on the 30th, the beating of the heart had augmented to 122 (no pulse being perceptible at the submaxillary artery), and the breathing to 70. Symptoms of death were now present, and it was very evident her end was fast approaching; she champed the bedding, grated her teeth, her pawing became slow and irregular, her body and extremities were of a clammy, deathly coldness, as also was the mouth, from which now drivelled saliva of a fetid smell and viscid character; the pupil of the eye became dilated and fixed, the nostrils expanded, and the membranes of a purple hue; her breathing was extremely quick and short, she sighed heavily and frequently, the throbbing of the heart was 130. She continued walking round the box and pawing the ground, but staggered at every step; at last, completely exhausted, with a few gasping sighs and tottering steps, she dropped and expired about three P.M., with scarcely a struggle.

Post-mortem Appearances and Remarks.—On the abdominal cavity being opened, the intestines, which were considerably distended with gas and food, gushed out with great force. On closer examination, a portion of the ileum, twenty inches in length, was found to be solidly packed with about fifteen lbs. of sand, and, strange to say, not a particle of food was mixed with it, although half-digested matter closely confined it at both extremities.

The part of the intestines that contained the sand exhibited a considerable gangrenous appearance, and a layer of coagulable lymph was deposited between the muscular and mucous coats, only as far as the extraneous matter extended, no other part of the intestines having taken on inflammation.

From the statement of the owner, the animal had been turned out during the severe weather which prevailed in the months of December and January last, and was all but obliged to subsist on the scanty fragments of grass only obtainable on the sunny side of a bank or under the hedges, where the sun's rays had melted the snow. The soil, being of a loose sandy nature, would not be frozen hard on account of the little amount of moisture it contained, and therefore a small portion of it would be taken together with the grass at every mouthful and swallowed. The probabilities are, that the sand had been some time in collecting, and that it had passed out of the stomach with the food, and being of a greater specific gravity, compared with the other contents of the intestines, had fallen to the bottom and formed a thin layer, perhaps for some distance along them, and so had not interfered with the normal functions of the animal, until, by the unusual exertion in drawing a heavy load up a long hill, and the increased vermicular action of the intestines, the sand had, by degrees, been worked together into one mass, and so have impacted the ileum, consequently causing a decided obstruction to the passage of anything, and producing inflammation which could not terminate otherwise than in death.

Heart Disease in the Horse. By James Horsburgh, M.R.C.V.S., Dalkeith.

There is a disease, or perhaps a group of diseases in horses, which may be said to have been totally ignored in our schools and veterinary works. It is nevertheless of the highest importance that diagnoses should be accurate in the class of cases I am about to refer to, especially that they may be detected in examinations for soundness.

Some years ago, being called to a horse belonging to the late Mr Laing of Shawfair, about half-way between this place and Edinburgh, I found him with flatulent colic, which was soon overcome; but on examining the pulse, I found something peculiar; but thinking the disease might have some effect upon it, I called a few days after to examine more particularly. I found the horse to all appearance in perfect health, in fine condition, but the pulse beating four times, and stopping the space of two beats. A slight rushing sound was heard on auscultation. I was satisfied it was disease in the heart, and told Mr Laing so, and the probable effects, viz., that he need not be surprised to find him dead some morning, or that he might drop down at work. One day, meeting Mr John Aitken, V.S., near the place, I mentioned the case, and asked him to go in and see the horse. Some time after, on meeting Mr A., he told me he had been called to stop at the end of a field where his driver was ploughing, with "Hoy, hoy, here is the horse as well as ever; you veterinary surgeons ken nae better than ither folk; he's no dead yet." I had requested, that if he died suddenly, notice should be sent, as I wished to examine him. About two months after, and while he was in the field loading wheat, he dropped down in the shafts of the cart, and, as the messenger said, "never shook a foot." It was on a Saturday. I could not go to examine him, and he was useless on Monday, as the weather was hot. In the same summer, Mr Philips, wood merchant, Bonnyrig, had a fine horse had the same disease. I had told him about six months before. He dropped down with an empty cart going to Roswell for coals.

About three years ago I examined a mare belonging to Mr Buchan, farmer, East Houses, and found she was severely affected. The pulse stopped about the time of every five beats, and a considerable rushing sound took place for about five beats successively. I told the owner she was incurable; and as she was insured, and he had been refused payment for the loss of a horse before, because the inspector did not see him, I warned him to let *him* know, as she would be certain to drop suddenly. She was unable to work. Some time after I met Mr B. He said, "Yon mere's dead noo." I said, "Well, did she die suddenly?" "No, she just ran forward as I was taking her to the water—ran on the top of me, and has near broken my leg; we then got her into the stable, sent for Mr Houston, V.S., the inspector; she was not dead when he came. He called out to get twa bottles of port wine, but

she was dead before they could be got for her." I had an opportunity of examining this mare. The semilunar valves were entirely broken down; I could pass my hand into the heart without any obstruction; it was at least twice its natural size, filling half the chest. Some time before she was carting stones. She was lost, and had gone off the road into Cowden mill-pond to drink. She was missed, and two men sent back to seek her. Got her at the water, and, with a whip on each side, forcibly drove her up a steep bank with nearly two tons of stones, which likely was the cause.

About a year ago, a farmer, about six miles distant, had pneumonia among his horses. Six of them were ill; all recovered. The pulsation in a fine five-year-old horse took my attention, and after he was well I made a particular examination; found, on auscultation, a particular rushing sound, which could be heard at a little distance, for three beats, which could be seen vibrating on the near side of the sternum. I showed the case and described it to the owner. He is a very active, intelligent man, and one of the few good judges of horses we have here. He was at once satisfied with the opinion of what was wrong, and "We must have him off immediately" was the decision. He was changed for another with a dealer. The exchange took place here. I saw the horse shown out in White Hart Street, after the bargain had been concluded to Mr Blair, farmer, Chalkyside. Mr Blair did not purchase him, but not from any unsoundness detected, for the veterinary surgeon who was with him at the time did not perceive the disease affecting the animal.

Note to the foregoing Communication. By JOHN GAMGEE, Principal of the New Veterinary College, Edinburgh.

MR HORSBURGH'S communication draws attention to a subject in which, I have taken great interest, and from circumstances which have occurred to me similar to those he relates. I have been called to cases that have been treated as affections of the respiratory organs or staggers, &c., and which have proved on auscultation to be instances of dilatation, insufficiency of auriculo-ventricula valves, or other allied lesions. Of all our domestic animals, the ox is most subject to heart disease, and usually, from injuries inflicted by sharp-pointed objects, which pass forwards into the thorax, from the reticulum. The dog next in frequency is troubled with valvular insufficiency, the result of rheumatic endocarditis, and the horse is seized insidiously, without premonitory signs, with degenerations of the heart, giving rise to a peculiar train of symptoms, and attended sooner or later with sudden death.

As usual amongst our British writers, we must refer to Mr Percivall's works for any information on such a subject, and his materials were scanty indeed, far more so than they are at the

present day. Mr Percivall quotes an instance at page 213 of his *Hippopathology*, and which has been recorded by Mr Pritchard, closely allied to the cases Mr Horsburgh alludes to, though attended with more severe symptoms.

By far the most valuable article yet published on Heart Disease in the lower animals, is in the *New Dictionary of Veterinary Medicine*, and contributed to that important work by M. U. Leblanc. It extends over 138 closely printed pages, and is remarkable for practical worth and great conciseness.

Leblanc remarks, that after having denied the existence of heart disease in animals, practitioners have admitted that they are, after all, not rare, but have doubted the possibility of diagnosing them. I think, with Leblanc, that though the diagnosis cannot be declared easy, the diseases are nevertheless so characteristic as to leave little doubt as to their nature, when observed by an intelligent practitioner. The diagnosis of heart disease will always call for correct anatomical and physiological knowledge, and careful observation. There are forms which the veterinarian will not easily distinguish, especially as he can never hope to attain that proficiency in auscultating the diseased heart which the human physician can acquire. Heart disease in man is not only common, but the heart is so exposed, and the region it occupies in the chest is so accessible for the purposes of percussion and auscultation, that very slight variations in position, size, &c., can be determined with the greatest accuracy. This cannot be accomplished in the horse. The ponderous shoulders close upon the keel-shaped thorax to such an extent as to prevent our carefully distinguishing the heart sounds at different parts, and totally precluding any investigation as to the space filled by the organ, however much enlarged it may be. I not only believe, however, with Leblanc, that we can attain to such a degree of proficiency as to determine the presence of any disease of the heart, with as much precision as that of any other organ, especially in the horse, but I think we can accomplish more in the diagnosis of heart affections than even in diseases of the lungs, liver, pancreas, &c. The diseases of all the internal organs in animals have been very imperfectly recognised. How few of our practitioners would like to stake their reputation on the recognition of hydrothorax. I do not forget the advice I received in the lecture-room when a student, to carry a small trochar and canula in the pocket to pierce, in the absence of on-lookers, the intercostal space, in any doubtful case, and thus make sure of diagnosing a condition, for which characteristic signs were wanting. I have since learned that though hydrothorax is one of the diseases easily recognised, it is certainly not more readily diagnosed than cardiac disorders.

General Symptoms of Diseases of the Heart.—The acute affections, such as pericarditis, or endocarditis are associated with very intense fever, and very commonly with a fever of a peculiar type, such as rheumatism or influenza. Precision in this diagnosis is very rarely

called for, as they yield to general antiphlogistic treatment, and are very commonly curable.

Some fatal heart complaints or injuries are remarkable for the absence of any general symptoms. This is particularly the case in cattle not used for severe exertion of any description, and in which a slight interference with the circulation may not affect the general health.

Frequently have cases been recorded of oxen falling dead, and having a knitting needle or wire lodged in the chest and piercing the pericardium and heart. The old adhesions prove, in such cases, that the instrument of death has been long creeping to the vital organ, and for some time so placed as necessarily to interfere with its rythmic action. It is the sudden death without any appreciable cause that leads us to suspect, before performing a post-mortem examination, that the heart is injured or affected.

Chronic heart disease, which gives rise to some inconvenience, varying in degree according to the importance of the lesion, is indicated by symptoms regarding which I have to offer some observations. Dyspnœa is a very prominent sign in many cases, and which leads to confusion so as to cause animals affected with interference to the organs of circulation to be treated for a different acute malady of the chest. An animal free from any acute symptoms except a loss of appetite, if perchance oppressed by exertion, will, when galloped, trotted, or even walked far, and especially up-hill, indicate great difficulty in breathing, and is in fact condemned as thick-winded. When such dyspnœa is unassociated with cough and is seen in an animal in good condition which is subject to cold extremities, venous regurgitation in the neck or exertion and other symptoms hereafter noticed, it is usually connected with dilatations or insufficiency of the mitral valve.

Vertigo is another symptom indicating a more severe form of organic lesion. A horse is for some time known to be unsound, or rather very incapable for any severe exertion. He is suddenly seized with symptoms of megrims when being driven, and on careful examination no pressure on the veins of the neck by the collar is found to have produced such an effect. The attacks recur, and the animal has to be thrown off work. He suddenly reels to and fro in the stable, and falls back or sinks to the ground as if shot, recovering himself when in the recumbent posture, and becomes unfit for work of any kind. Such a form of staggers is invariably due to interference with the heart's action by organic disease. It must not be confounded with coma or sleepy staggers, nor with stomach staggers, or ordinary attacks of megrims.

Irregularity and frequency of the pulse is another of the general symptoms, which, though observed in fevers, &c., is commonly the first characteristic sign which leads to a local examination of the heart.

Habitual coldness of the ears and extremities, indicating a languid circulation, is a very useful sign.

Œdema first occurring in the hind legs, then in the fore, and lastly in the chest and belly, is a useful symptom characteristic in some heart affections.

However active and nervous an animal may naturally be, if seized with cardiac disease, a change occurs, and there is a tendency to obesity, dulness, inactivity, and, in the majority of instances, a chance of some sudden and irremediable interference with the propulsion of blood, hence instantaneous death.

Having thus drawn attention to some valuable general symptoms of heart disease, I reproduce Leblanc's classification of the maladies affecting the central organ of circulation:—

- **Local Diseases of the Heart.**
  - Diseases without appreciable organic lesion.
    - Nevrosæ
      - Hyperdynamia — Palpitations.
      - Adynamia
        - Feeble action.
        - Syncope.
      - Ataxodynamia
        - Inequality
        - Irregularity
        - Intermittence

        } of beats.
  - Diseases appreciable by organic lesion.
    - Vital maladies
      - Congenital anomalies of position and form — very various.
      - Accidental anomalies
        - Active dropsy of the pericardium.
        - Hypertrophy.
        - Atrophy.
      - Phlegmasiæ
        - Pericarditis.
        - Endocarditis.
        - Carditis.
        - Nevritis.
      - Suppuration.
      - Ulceration.
      - Gangrene.
      - Cicatrices.
      - Cellular, fibrous, fatty, cartilaginous, osseous, and calcareous productions.
      - Purulent, glanderous, cancerous, tuberculous, and melanic infections.
    - Solutions of continuity
      - Contusions.
      - Ruptures.
      - Lacerations.
      - Wounds.
    - Changes of relations
      - Displacements.
      - Herniæ.
    - Changes in capacity
      - Dilatation.
      - Constriction.
      - Obliteration.
    - Foreign bodies.
    - Parasites.

For the purpose of rendering complete a table which should include every form of heart disease, the foregoing may not be inappropriate. It is evident, that under the head Nevrosæ, Leblanc includes all those functional disorders which exist as symptoms of disease. Thus, palpitation is a marked sign in anæmia. It is a troublesome symptom in heart diseases, and from the difficulty of determining its causes, some cases may be described under the head Palpitation. We do not think, therefore, that under the head Local Diseases of the Heart, we can consider as essential diseases all that Leblanc has mentioned. The diseases with appreciable organic lesion probably admit of a more detailed list, even in a simple table. The valvular diseases are not considered. It is, moreover, not necessary to divide the cardiac inflammations into Pericarditis, Endocarditis, Carditis, and Nevritis. A very peculiar disease the latter! The classification in this respect is purely theoretical. We observe frequently enough, cases in which inflammatory action is limited either to the pericardium or endocardium, but all cases of *carditis* are to be referred to inflammation of one of these membranes. Again, with regard to the infections, they cannot be called local heart diseases, but are constitutional affections, involving many organs, and amongst them the heart. In reproducing Leblanc's list, therefore, we do not consider that it is by any means perfect, but it indicates that heart diseases are far from exceptional, and even of doubtful nature.

Cleveland Agricultural Society Meeting at Yarm.

On the 15th and 16th of August, the old town of Yarm was in a state of excitement, and the scene of agreeable pastime for many during the two days last week that the Cleveland Agricultural Society held its annual show there. Every visitor received that for which Yorkshire is proverbially renowned—a hearty welcome, and a substantially good entertainment.

In connection with the history of the rise and progress of agricultural societies in Great Britain, that of Cleveland holds a prominent position. This year's exhibition was the twenty-eighth, the show having been formerly held alternately at Guiseboro' and Stokesley. But since the discovery of an abundant source of ironstone, more than one important town has grown in the neighbourhood, and five towns are now honoured in turn with the great annual gathering, which attracts attention over all England.

The shows of this Society are reputed from the fact of having originated several important practices which have been followed even by the national associations. The Society was established in 1833. The first reaping machine trial took place under its auspices at Ormsby in 1851. Last year, at Middlesbro', a prize was for the first time offered for the best thoroughbred stallion for ordinary purposes,

and this has been followed up in the present year by the Royal Agricultural Society at Leeds. Again, the Cleveland Society has been the first to offer a prize to that essentially useful class of men, the farriers. This practice was inaugurated at Middlesbro' in 1860, and followed up even with greater success this year at Yarm. Lastly, the fox-hound shares some of the attention of this enterprising association, and for the first time the huntsmen congregated to exhibit their favourites, and to receive every mark of attention and approbation.

Such signs of progress and development are indicative of the advantages possessed by Cleveland in all matters connected with animals. It has long been noted for its horse-producing capabilities. Wherever a carriage is used, Cleveland bays are recognised as the best and handsomest horses for use. Weight-carrying hunters, roadsters, and other kinds of horses have, by their excellence, distinguished Cleveland and its agricultural shows. The spirit of the people and intelligence in the art of breeding have ensured such a result—though the Society itself is indebted for its progressive success in no small measure to Mr Thomas Parrington, the secretary, whose resignation, announced after the dinner by the chairman, was received with deep regret, and many expressions of hope that it is not too late to secure his services in future.

This year the arrangements were, that Thursday should be set apart for the hounds and horse-shoers, as subjects for special prizes.

The fox-hounds exhibited were remarkable for their beauty, and all the arrangements for their show were excellent. Suitable kennels were erected, with a proper enclosure around, flagged in the middle, and altogether satisfactory for the health, comfort, and display of these animals. The huntsmen who accompanied the hounds from each pack were arrayed in scarlet, and brought out their couples as fast as the judges could dispose of them. Great accuracy was manifested in judging these animals, and the unaided eye was not alone relied upon, as Captain Williams measured not a few of their points, and narrowly compared the hounds. The judges, who performed their duty so as to give the greatest satisfaction to all, were—Mark Milbank, Esq., Thorpe Perrow, Bedale, Yorkshire; and Captain Percy Williams, Bamby Moor, Bedford, Nottinghamshire. Scotland was not represented amongst the exhibitors, though the Earl of Wemyss's huntsman was present, and well greeted.

Agricultural Societies, aiming as they do at the advancement of the science and art of agriculture, will, no doubt, take care that sections beyond that sphere do not take a foremost place in their shows. An exhibition of hounds may have some indirect influence—agriculture and fox-hunting flourish together. There are some things, such as our national sports, which take care of themselves, and it is pre-eminently the case with hunting. Looking at the beautiful hounds shown at Yarm in this the third year since the first exhibition at Redcar, we find such a state of perfection as to doubt whether any

better can be produced in future years. All excellent, there are only shades of differenee between the brilliant specimens which secured the silver cup for Mr Hill and the representatives of the Fitzwilliam kennels, in Tom Sebright's charge. Again, we might notice Lord Middleton's symmetrical couple, and in fact all approached perfection. Would that our horses were all as perfect!

We return to the position which we took whilst on the grounds at Yarm, that the whole show must be made up of parts, and it is more than probable that as each section attracts new influence and source of strength, so in the long run is the especial object of an agricultural society most satisfactorily attained.

We have elsewhere made some remarks on the horse-shoers who were to have been judged on the Thursday, but from the number of keen competitors—seventeen out of eighteen entered—the whole of Friday was also devoted to the task. It is a very important step in advance taken by the Cleveland Society, and one which must be taken up by agricultural associations in general.

We will not detain our readers in reference to that motley group of animals designated fox-terriers, and shall proceed at once with the hunters. They were on the ground on Thursday, but only judged on the Friday, when they were passed through the ordeal of leaping over artificial fences of hedge, timber, &c. This trial was restricted to class 9, comprising five and six year-old geldings and mares. There were nineteen entries for this class, and amongst them several good animals showing breed, with power and substance. We are not quite persuaded that it is advisable to exhibit young hunters over fences, and have never relied on accustoming a young horse at the bar, in confined space, and before a large assemblage of persons. We can always judge the hunter better by his form, breeding, and paces, and the best horses will refuse the leaping-bar, whilst the majority will jump over a bar that they can almost walk under. There used to be an old saying amongst hunting men, to the effect that some horses were such good jumpers that they could hardly be fenced in by any means, and the only chance for them to keep near any horses in a long run was in the field being small, and the fences close together; when once in a large field their chances in the chase were gone, as they took so long to get across it. The only advantage that we can see to be derived by jumping hunters is the attraction of those who would probably not pay the shilling at the gate without it.

Passing over the other classes of hunters, we shall draw special attention to the Cleveland farmers' glory—the Cleveland bay brood mares. Of these ten were exhibited, and though these animals are regretably scarce, we saw seven or eight very good ones. Their foals bore evidence to the existence still of some good stallions, though none of these were exhibited.

In class 16, coaching brood mares—that is to say, Clevelands with a cross of blood—there were also some good animals, and similar remarks may be made with regard to all the other classes, confirming

our long-entertained belief that every description of horse can be had in high perfection in Cleveland. There is no other department of agriculture in which better, or as good, results can be expected in the North Riding of Yorkshire, than in fostering the breeds of horses.

For the last fifteen years the cry has been in the North and East Ridings of Yorkshire, that they could not supply anything like a sufficient number of horses, and that all the best stallions and mares were going abroad. It were well that some of the Arab spirit were instilled into Yorkshire breeders, to prevent their parting with their best mares for a few pounds gain. It is like selling a field which might return the most handsome profits—or keeping the seed in the granary. There are few people out of Yorkshire who really know what a good Cleveland horse is. He is not necessarily seventeen hands high, with flat sides, with head and legs out of proportion to the trunk, hence want of stamina and lasting qualities. Some such animal is often passed for a type of the class, but the good Cleveland is a fine bay colour, black legs, as free from long hair as the blood-horse. All above sixteen hands and an inch in height we consider overgrown, and prefer the hands without the inch. He has good loins and chest, with neck and shoulders well-formed, head well-placed, though commonly rather coarse. In such animals the Cleveland has the best mares in the world to work in the plough and to breed the most useful kinds of horses.

We sometimes hear talk of our best blood-horses and mares being taken out of the country. There we hold the cry to be in a great measure false. The two cases afford no comparison of the blood-stock; all the best of both sexes are retained for stock. Comparatively few blood-mares are exported annually. And though there is reason to regret the exportation of some good stallions, such as were Lottery, Priam, Gladiator, the Baron, and others that might be mentioned, spreading over many years, all of these left several seasons' stock behind, and most of them sons and many daughters to transmit their blood. Such a case as that of Fisherman going away as soon as his racing career is over, seldom happens, and will pay nobody. But horses are worth most in England, where we have the mares, the soil, the climate, and the market for the produce.

Now with regard to the good Cleveland mares and the coaching mares of the East Riding. These are found only in these districts, and their number is, according to present demands, unequal to requirement. Then, coming to the stallions of the class, they are few; as soon as one better than the average appears, he is sold away—seldom remains after three years old in the country. Now, according to the present custom of awarding premiums, it amounts to ticketing all the best stallions and mares for sales. The foreign buyer learns the whereabouts of the kind of animal he is in search of by the prize-list. The horse-agent no less likes to get a horse stamped with such authoritative evidence of superiority; thus the stallion or mare which the country required has been premiumed, made public, and sold.

We have devoted so much space to the horses, that we have few remarks for cattle and sheep to offer. Sheep were below the mark, but Shorthorned animals excelled. There were several excellent bulls, but they suggest a few observations which apply to all shows, and not particularly to the one at Yarm. We allude to the wasteful and pernicious custom of fattening store animals until they lose all power to propagate or only at great risk and for a short period. The subject has been long and constantly discussed; but it appears strange that judges should not estimate the fitness of each animal for the special purpose it is required for. An incident occurred at Yarm illustrating what we refer to.

A nobleman's servant whom we met on the ground and happened to know, said in reply to the question—"What animals have you brought to the exhibition?" "Only a bull," pointing to the place in the field where the bull was. We walked round to see him, and found him a very fine animal. Near by were others of the same age —three years—and some younger, with one older. On lifting up the cloth to show us the bull, the servant said, "He will not gain any prize, sir." "How do you know?" was the question we put. "Because he has not been fed for it. My master won't feed for the prize," he added, "he wants the use of the bull." We have quoted the anecdote because we have thought it full of instruction. To gain a prize a man must sacrifice his animal, if it be a bull, a ram, or a boar. Nor are horses exempt from the pampering and spoiling custom. So much have the evils of the fattening custom become manifest that one of the largest landowners who farms in the Lothians observed not long since, that he had made it a rule never to use prize animals for stock, having been unsuccessful owing to their exceedingly fat state. Surely all this could be improved on. This is another effect of the times and railways; but for railways the animals never could have been transferred from one place of exhibition to another.

SHOEING SMITHS.

Judges.—Joseph Gamgee, sen., Professor of the Principles and Practice of Shoeing, New Veterinary College, Edinburgh; W. Hedley, V.S., Richmond; William Gadsby, Harewood House, Leeds.

Hunting shoeing smiths, L.5, William Brown, Middlesbro'. Second, L.3, William Stead, Leyburn. Third, L.2, Robert C. Allison, Richmond, and George Turner, Sickling Hall, Wetherby (divided).

REPRINT OF REMARKABLE MEMOIRS.

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Observations on the Variolæ Vaccinæ, as they occasionally appear in the Vale of Aylesbury, with an Account of some recent Experiments in the Vaccination, Retro-Vaccination, and Variolation of Cows. By ROBERT CEELY, Esq., Surgeon to the Buckinghamshire Infirmary.

(*Continued from page* 481).

Varieties, Anomalies, and Analogies.—Although the medical observer, practically acquainted with the varieties and anomalies of the vaccine disease in man, will neither be much surprised nor long perplexed at less obvious though strictly analogous occurrences in the cow; yet there are some particulars connected with this part of the subject which appear to me not unworthy of remark.

The normal course of the natural and casual disease is completed in about twenty or twenty-three days, viz., four days, in the natural form, from the probable period of invasion (in the casual, three or four from the presumed period of incubation), to the appearance of the eruption; six or seven from this period to the full development and perfect maturation of the vesicle; five or six from its decline to perfect desiccation; five or six from this period to the spontaneous separation of the crust, and the formation of the cicatrix. Irregularities, however, both real and apparent, are observed. In the natural disease the first two stages often seem materially abridged. In the casual, the first seems prolonged, and the second proportionately abridged; or the first is prolonged, and the second and subsequent stages are normal. In both forms the third stage seems often abridged, sometimes prolonged. Lastly, the eruption is not always simultaneously developed. All these irregularities do occur, some more frequently than others; but some of them are very often merely apparent anomalies.

It would frequently appear, from the representations of the milkers, that the eruption in both forms of the disease reaches its acmé in four days; and this would be perfectly correct if we could admit that the period of detection was coeval with the period of eruption; but in very few instances, on their parts, does this appear to be the case. It has been already stated that these men rarely, if ever, detect any precursory fever; they often disregard the first occurrence of topical heat, and as seldom notice the first period of papulation. Nor is this in the least to be wondered at: it is, in truth, very difficult for an experienced observer at all times to escape error in this latter particular, and oversights will occur to the most vigilant from various causes, especially from peculiarity of colour, vascularity, and texture of skin, as well as temperament of the individual. It is indeed surprising, at times, to observe with what suddenness and rapidity the

second stage appears to be completed, seeming scarcely to occupy more than three or four days. In this, of course, we see nothing more than what is occasionally observed in man from various causes. Greater difficulty in detecting the commencement of papulation in the cow, however, is the fruitful source of apparent anomalies of this kind; but vigilant observation, I am persuaded, by leading to the earlier detection of the obscure indications of this stage, will materially diminish their number. Topical heat, slight discolouration, slight tenderness, some induration, will often exist three or four days before any well-defined circumscribed tumefaction is perceptible. When the corium and epidermis are thin and vascular, the pigment not very dark, and the examinations are carefully and repeatedly made in a good light, the respective stages are better observed, and fewer irregularities are apparent. Although the exact period of incubation of the causal disease cannot always be positively determined, yet there seems good reason to believe that it is occasionally prolonged from five to eight days, the subsequent stages being perfectly regular.

The abridgement of the third stage, or the too early appearance of turbidity in the lymph, or the premature occurrence of vesicular desiccation, and the circumstances upon which these and other real and apparent anomalies depend, are well deserving of consideration. In order that they may be more correctly appreciated and better understood, it seems necessary to furnish an analysis of the principal phenomena of the eruption in connection with some of the varied circumstances under which they arise; and this I shall proceed to attempt, although it must necessarily involve some repetition, which to many, I fear, will prove tedious, and be deemed superfluous. The eruption commences in papulæ, which have their seat in the corium. They are not always simultaneously developed, either in the natural or casual form. In size and colour the papulæ differ according to their age, the thickness and colour of the skin. In thin, fair, and vascular skins, at a very early period, they resemble flea or bug bites, and are of a deep rose red; they become in a day or two as large as a pea, and have frequently a dark damask or even livid hue, which gradually diminishes as they acquire their vesicular character. In very dark skins of this texture, at this period, some degree of redness, a coppery-reddish brown, or a tawny hue, is observable. In thick skins, though fair, the colour is much paler, and is, of course, sooner lost. In dark thick skins, and even in flesh-coloured skins if very thick, the red colour is often entirely wanting, or is scarcely appreciable. Here, therefore, the papulæ are seldom noticed till they have acquired the size of a vetch or a pea. They feel hard, raised, more or less round, are hot and tender. Many of these varieties may occur at the same time in different parts of the same animal.

In three or four days from their first appearance, the papulæ acquire their vesicular character, and have more or less of central depression; continuing gradually to increase, in three or four days more they arrive at their fullest degree of development, and sometimes are

surrounded with an areola, and always imbedded in a circumscribed induration of the adjacent skin and subjacent cellular tissue. The first change in the pimple is indicated by the appearance at its apex of a dull or dusky yellowish point; the circumference gradually increases in substance and extent, and the centre becomes wider and deeper; at length a flattened vesicle is formed, with a dimpled or depressed centre. The degree of central depression differs not only in different stages of the vesicle, but also in different animals, and in different parts of the same animal at the same time. It is in general more considerable about the fifth or sixth day of its formation. In very fair skins, (especially on the udder), just before the appearance of the areola, and in very dark skins of a slate, blue, or black colour, where no areola appears, the depression is better felt than seen; but in the former a dirty ochre or dusky spot in the centre is rarely ever absent to aid the eye. The depression is sometimes wanting in some small vesicles on the teats at their early stage; but it appears in the middle or termination of their course, and is again entirely lost. An anatomical examination of the structure of the vesicle just before it attains maturity shows that its colour, indurated margin, and central depression, depend on the existence of an adventitious membrane formed in the corium and secreted by the papillæ. It is raised in the form of a zone, and is intimately connected with the epidermis. It has a cellular structure, in which is secreted and contained a clear viscid lymph. The cells appear to be arranged in two concentric rows, and are separated from each other by whitish radiating partitions, which, at their converging extremities, are united by a central membranous band. The dusky central spot which marked the first change of the pimple into the vesicle, and which has now become darker and more distinct, seems to be caused by a greater or less degree of separation and desiccation of the epidermis, stretched over a crypt-like recess, which contains a small quantity of semi-concrete lymph-like matter, occasionally a turbid opaque fluid. This cellular, adventitious, membranous conformation, though differing in texture and amount in different vesicles, is invariably present, and is not less essential than diagnostic. About the fourth or fifth day of the eruption, or two days before the decline of the vesicle, there often appears at its base a red circle, which gradually increases in extent till that event occurs. During this period the lymph within the cells, having become more abundant and less viscid, and somewhat opaque, bursts and breaks up the cells and their connecting band, separates the epidermis from its attachment to the subjacent adventitious membrane, and the vesicle, losing its central depression, becomes more or less acuminate, presenting a conoidal or semi-globular form. The lymph soon acquires a pale straw-colour or light amber hue, and speedily becomes more serous, turbid, and opaque. Acumination of the vesicle, however, is not always confined to this period. It takes place earlier, later, or never occurs. It is earliest in small, comparatively superficial vesicles, which seem to resemble the supernum-

erary vesicles in children; is later in thick skins, not very vascular, being postponed till the tenth, eleventh, or twelfth day of the disease. It is earlier on the teats where the cellular tissue is more lax, than on the udder where it is more compact. There are different degrees of acumination: in some vesicles it is barely visible, especially on the udder; but on the teats it is very often strongly marked.

The quantity and quality of the lymph varies, not only at different stages, but also in different parts of the same subject. It is generally more abundant and less viscid on the teats than on the udder; more copious commonly in the cow than the heifer. In the early stage of some vesicles, chiefly those which are comparatively superficial, and often others which have been irritated, the lymph is occasionally turbid, and even bloody, without any impairment of its efficiency. In these vesicles, too, are often observed pustular or vesicated margins, analogous to those seen in the puffed irregular vesicles of adults, or the vesicles of irritable habits, either with or without local irritation. They are more apt to occur on the teats, but happen in thin skins, on the udder, from the slightest irritation. Here the cuticle appears sodden and rumpled, and is soon removed. A premature decadence of the vesicle sometimes occurs from an accidental escape of its contents; it is then covered with concrete lymph. An irregular escape of lymph will give rise to alternate decline and revival. When the escape is slight and progressive, it constitutes another form of vesicle—the vesicle with a central crust, which being liable to be mistaken for a desiccated vesicle, deserves notice. This vesicle or "vesicular tumor," assumes its characteristic form at various periods, most commonly at an early stage. It depends generally on a deep fissure in the epidermis and corium, through which the lymph slowly oozes, and concreting, exhibits a central crust. The fissure may not have completely closed before the formation of lymph: it may have re-opened during any part of that process, therefore the characteristic form may be acquired at different periods. When it exists at an early period, the dusky yellowish spot of the centre of the vesicle is absent, its place is occupied by concrete lymph, and the vesicle commonly has more central depression, and more elevation and induration of the margin.

The crust gradually changes from an amber to a yellowish brown or black; sometimes, from an admixture of blood, it is black at an early stage. It partakes of the form of the vesicle, though sometimes it is irregular. As the vesicle enlarges, the central crust in the same ratio increases in breadth and thickness, advancing towards the circumference, and resting *upon* the epidermis until the tenth or eleventh day, when the elevated margin beginning to decline, the central crust having become darker, thicker, and larger, in all directions, often reaches its inner circle, occasionally partially overtops it, about the thirteenth or fourteenth day. The epidermis around and beneath this crust, if punctured at any part except the immediate centre, yields nothing but blood. It often has a rumpled and pustular ap-

pearance. These vesicles, and a few others scantily supplied with lymph, never acuminate.

The areola differs in colour and extent, and is often entirely absent. In thick white skins, at its acmé, it is of a pale rose-colour, and seldom, when the vesicles are distinct, more than three or four lines in diameter. In dark skins it is entirely absent, except when they are very thin: in that case it will appear as a circular line of a dull vermilion, a reddish brown, a tawny, or a coppery hue. When absent, the erythematous inflammation of the superficial, surrounding, and subjacent tissues, of which it is one of the signs, is still indicated by others, viz., heat, tenderness, and circumscribed induration. This induration is greater when the tissues are thick and compact, though more circumscribed and better defined. Where they are thin and lax, it is less regular and more diffuse. The former is the case on the udder, the latter on the teats.

Seat of the Vesicles.—The vesicles are found principally on the teats, but are often seen on the udder, especially on the lower and naked part. They are very frequent around the base and neck of the teat, and also on the body, now and then on the apex. The number varies considerably—occasionally one or two; not unfrequently twenty, thirty, or even sixty dispersed about the teats and udder.

Size and form of the Vesicles.—Perfect vesicles may be seen scarcely much larger than a pin's head, and not unfrequently as large as a sixpence, sometimes even larger. On the same animal they often appear as large as a vetch, a pea, a horse-bean; the latter is a common size. In general the more numerous they are, the smaller they are. The form of the vesicles is circular or oval, now and then, in some parts, somewhat irregular; almost invariably circular around the base and neck of the teats. The oval form is to be found on the udder, but principally on the body of the teats. Its axis seems to be determined, as well as its form, by a fissure or furrow in the skin. Where the skin is thin, vascular, and much furrowed and corrugated, which is often the case on the teats of red cows, the form is irregular, more especially when the vesicles are coalescent.

The colour of the Vesicles.—This varies according to the age of the vesicle, and is again modified by the colour and texture of the skin. At an early period, from the first to the third day, where the skin is thin and vascular and the colour fair, that of the vesicles varies from a florid red to a deep damask or purple. At a corresponding period, in thick skins of a light colour, that of the vesicles is less intense, but often bluish. In thin skins, very dark, a degree of redness is still visible, often a light damask or bright rose; but when the skin is thick and dark, the colour is more obscure. In general the vesicle is lighter in colour than the surrounding pigment; but in all cases there is presented a striking metallic glistening aspect. As the vesicles advance, the depth of their colour proportionately diminishes. It is, however, always darker at the base than on the surface, especi-

ally on the elevated border, where it is also more glistening. In the fairer skins, the glistening lustre resembles that of silver or pearl; and some vesicles, where the skin appears diaphanous, have a bluish white or pale slate colour, particularly towards their centre. In very dark thin skins, the colour of the vesicles is occasionally reddish at their base, and they have their surface much lighter than their ground, glistening with the lustre of mica or of lead. When fully developed on the light-coloured skins, the vesicles vary from a bright to a pale rose or flesh colour, which is deeper at the base, and blends softly with the varying tint of the areola, when present, or terminates in a narrow rose-coloured ring when that is absent. At this period, even in the dark reddish brown skins, the raised and tense margins of the vesicles have a rosy hue, which increases towards the base, where it terminates, except in very thin skins, insensibly in a deep tawny hue. The bluish, bluish white, grey, or slate-coloured tint of the depressed surfaces of some vesicles is most apparent, and the metallic lustre is most conspicuous in all. But these are not all the variations of colour met with; there are others some of which are not unfrequent. On white skins, when very thick, and at the same time much corrugated, the vesicles have a dull white or cream colour. This will also appear when some vesicles have been injured and a portion of their contents has escaped, diminishing their tension and plumpness. A recovery of tension restores their former warmth of colour and glistening aspect. On light brown thin skins, especially when the vesicles are not deeply seated, the depressed centre is of a dirty yellowish white. These and other superficial vesicles, which resemble more the human vaccine vesicle, have a tendency to become pustular on their surface, and, at their margin, often vesicate.

After the tenth day the vesicle loses its plumpness, its warmth of colour, its glistening aspect, its areola, and its indurated base, and in general, when undisturbed, rapidly subsides. Those which early exhibit the central crust, in a day or two after this period, have their centres completely occupied with its oval, or circular, or irregular form and scabrous substance. By the thirteenth or fourteenth day this crust is at its greatest magnitude, is of a brownish black colour, and adheres more or less tenaciously to the epidermis and skin beneath, and is bounded almost always by some traces of indurated margin, even at the twentieth or twenty-third day, when it separates and leaves a smooth cicatrix, slightly depressed, of a white colour on dark skins, but often of a pale rose on lighter coloured and thin skins. The acuminated vesicles frequently spontaneously burst, are often broken, or slowly collapse, and, with others which have little or no acumination, gradually desiccate from the centre to the circumference, changing their colour, which is dull and rather paler than that of the surrounding skin, to a yellowish, yellowish brown, and black, and forming at length a thick, laminated, partly diaphanous crust, of a horny and glistening aspect, but brittle texture. The small crusts are often slightly acuminated, the larger more or less depressed in

the centre, both retaining the form of the vesicle, but being of course, less in diameter. These crusts fall about the same time as those above mentioned, leaving a similar cicatrix.

On the teats, especially about their bodies, the crusts are often large, being conjoint and often compound, two or more crusts of coalescent vesicles being directly united or intermediately connected by thin, dirty yellowish, opaque, or black irregular incrustations, left by pre-existing marginal or intervening erysipelatous vesications, which have been attended with sanguineous exudation or puriform secretion. Here the cicatrices are often deep and irregular, jagged or cruciform; but the greater part of the ulceration in general appears to have been superficial, in the central parts of which the specific and deeper erosions of the cutis are very conspicuous. In some animals, however, where the eruption has been interfluent, and much local irritation inflicted, deep and irregular seams succeed the more profound and protracted ulcerations. The appearance of the natural and casual disease, not unfrequently in different stages, at the same time, in the same subject, is too obvious to be overlooked by even superficial observers. Papular or tubercular elevations—papulæ, more or less advanced to the vesicular form—vesicles, more or less dimpled or depressed—vesicles, more or less acuminate, conoidal, or semi-globular—vesicles, more or less desiccated—varying in size from a mere point to eight or ten lines or more in diameter, certainly may be seen at times co-existent. Some of the causes are sufficiently obvious. No sooner is lymph produced, than by pressure in the recumbent posture, self-vaccination may occur; but a more frequent and more efficient cause are the reiterated manipulations of the milkers. These men, night and morning, in the performance of another task, unconsciously but most effectually perform on an extensive scale a very important process—a series of *re-vaccinations*, both from the infecting and infected animals. Hence many of the apparent anomalies and incongruities above alluded to. Some papulæ, appearing late, never pass into the other stages; others, of earlier date, possess some of the vesicular attributes; others, still earlier, exhibit them all, and hasten on with rapid but unequal steps to the final stage of desiccation.

A due consideration of all these phenomena and their associated circumstances would make it appear, therefore, that the disease in the cow has few if any anomalies by which it may be distinguished from the disease observed in man. The phenomena in man called supernumerary vesicles, and those produced by what has been called Bryce's test, seem as strictly analagous to those appertaining to the cow as can well be desired. It is in the supernumerary vesicles alone of man, whether eruptive or not, that we are able to trace the corresponding changes from the papular to the vesicular state.[1] The

[1] Eruptive supernumerary vesicles of course are not seen every day; but vesicles which exhibit their peculiar features may often be successfully sought

inoculated vesicle in him, of course, will not suffice for that purpose any more than the casual vesicle in the cow, palpably induced by the manual application of lymph to a visibly abraded or fissured surface. The two kinds of vesicle in the cow, it has been seen, exhibit some striking differences from the supernumerary and inoculated vesicle in man. In the supernumerary vesicle, though the tendency suddenly to acuminate does exist, as in the cow, yet it always possesses more obvious indications of the vesicular character on its surface and at its margin than is ever seen before acumination in that animal, where an indurated and more or less elevated solid substantial margin alone appears. This remark applies also to the vesicular tumor, or the vesicle with a central crust; its margin is solid, indurated, tense, and shining, but the epidermis is not raised by distended cells giving an obvious vesicular appearance as in man. The central crust of this vesicle, of course, has its analogy in man, and in him depends on a corresponding though artificial cause. It is always progressive and more obvious in the cow. The lymph in man has not that tendency to escape, in the form of a crust, from a deep puncture or accidental fissure; the containing cells, readily distending, elevate the yielding and thinner cuticle; whereas, in the cow, the lymph is slowly and scantily secreted for a time, the cuticle is thick and resisting, and an epidermic fissure affords the readiest outlet. A near approach to this tumor-like form sometimes, it is true, is found in children in particular states of the health, or in those of phlegmatic habits, otherwise

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for by those who will spare the time and trouble for the purpose of observing the phenomena alluded to. Use active liquid lymph in great abundance to every puncture, made so as to draw blood rather freely; wipe the lancet over the puncture, leaving it covered all around with lymph; take care, by attention to position, &c., that the blood shall dry over and around the wound, and thus cover the lymph. It will often happen, in young and favourable skins, that one or two supernumerary vesicles will appear at a greater or less distance from the punctures, which, in time, nearly or completely coalesce. Sometimes they will appear even two or three inches distant from the puncture, when the blood, mixed with lymph, has trickled down and dried there. Nearly the same thing may be produced by direct vaccination: insert a point, well charged only at its extremity, cautiously and deeply into a puncture, running obliquely along the skin, and let no portion of the lymph come in contact with the lips of the wound. In general the vesicle will form at a distance from the puncture and exhibit, like those just mentioned, a resemblance in miniature to the natural vaccine. These and the really eruptive supernumerary vaccine vesicles alone afford us an opportunity of observing the striking resemblance which subsists between the vaccine and human variola. Here we may see the granular elevated pimple, its ash-coloured summit, its early and obvious central depression, the gradual loss of that, and the final acumination, precisely like casual variola, from which, in anatomical structure, from the fourth to the fifth or sixth day, as shown by M. Gendrin, (*Histoire Anatomique des Inflammations, tome* 1), the vaccine vesicle does not essentially differ. The subject of these experiments, however, must be inspected daily from the third to the eleventh day, between which periods these and other supernumerary vesicles appear. By adopting this step in one hundred and fifty cases, I have succeeded in watching the progress of fifty such vesicles.

healthy, with thick skins, where the vesicle, of a rose or damask hue, rises boldly and in a solid form above the level of the skin, covered with an ash-coloured or bluish epidermis, which being punctured, like that on the cow, yields scarcely anything but blood, even till the tenth day. In form, size, colour, &c., the analogies, exceptions, and their causes, are too obvious to need particular description.[1] In the irregular appearance of the eruption, hitherto, I have seen nothing essentially different from what occasionally occurs or may be induced in man, as above alluded to; and as I have never yet succeeded, after numerous attempts, to re-vaccinate the cow, subsequently to the development of the areola or its attendant phenomena, I should look with suspicion and some distrust on vesicles apparently evolved after the twelfth day.

The cow, like children, and the young of other animals, particularly high-bred dogs, is subject to a purely vesicular eruption, consequent upon vaccine fever, which often bears a striking resemblance to vesicular varicella. This commonly occurs about the ninth or tenth day of the vaccine, in the form of erythemato-papular elevations of different sizes, solitary or in groups, evidently of sub-epidermic origin, which, within twenty-four hours, contain a pellucid serous fluid, raising the epidermis. This fluid, being more or less imbibed by the cuticle, gives, in the white skins, an early appearance of opacity to the vesicle; in the darker skins, a yellowish brown, or dirty yellowish white colour is soon apparent. On the second day the fluid is straw-coloured, and becomes speedily turbid; the cuticle collapses or bursts, turns yellowish brown, and before the fifth day the vesicles desiccate with brown and black, thin, flimsy, brittle crusts, which speedily fall. They vary in size from a mere point to that of a vetch or small pea, or are even larger, may occur on any part, but most commonly appear on parts void of hair; sometimes they arise later, and not unfrequently continue to form and desiccate for three or four weeks.

Besides this vesicular and other occasional co-existent eczematous and ecthymatous eruptions, less likely to be mistaken, it must be borne in mind that the state of the teats and udder, during and after the specific eruption, is very favourable for the generation and reception of other contagious eruptions, which are sometimes seen to occur in the same dairy. Hence it is no uncommon thing for cows

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[1] In the smooth, really beautiful, and white or flesh-coloured skins of some cows, so closely resembling the plump, tense, velvet-like surface of a fine healthy infant's arm, there is often an obvious approach to similarity of colour in an advanced stage of the vesicle. The prominent circular or oval form, now and then varied by some irregularity, is evidently often connected, in the casual disease, (as in man), with a pointed or linear opening in the epidermis. Folds, furrows, and fissures of the skin, cause irregularity in form, and stand, to a certain extent, in the place of these irregular punctures accidentally or designedly made by the vaccinator, which produce, till the ninth or tenth day, crescentic, reniform, and other fantastic shapes.

which have recently passed through the former to become the subjects of the spurious pocks. In the winter of 1838–9, I witnessed this phenomenon most satisfactorily. In a dairy farm, containing several sheds, the animals in one shed, scarcely recovered from the true disease, became affected with the white vesicle, (to be hereafter figured and described), from the introduction of an affected cow from another shed, and several of them continued under its influence for two and three weeks longer. The character of the eruption of genuine vaccine, its seat, its cellular structure, its hard and knotty feel, its glistening aspect, its tardy and progressive change to the vesicular form, its central depression, its late acumination, afford in general broad and palpable grounds of distinction. Difficulties in the way of prompt and accurate discriminaton, especially in solitary vesicles, will be better indicated and more appropriately discussed in a special account of the spurious pocks.

Recurrence of the disease.—At what period the disease may recur in the cow, and with what amount of modification, I have had no opportunity of personally observing. Here the animal is rarely kept for dairy purposes after the fourth or fifth period of calving, often not so long; and as it is not very common to notice the disease in the same dairy more than once within that time, recurrent or modified cases are not likely to be met with.

CASUAL COW-POX IN MAN.

If reliance could be placed on the judgment of persons concerned in the management of milch cows, we should be induced to believe that the cow-pox is of very frequent occurrence in this neighbourhood; but as such persons in general decide on the existence of this disease mainly on the grounds of severity and communicability, it is impossible for others, acquainted with the eruptive diseases of cows, and therefore aware of the fallacy of such a diagnosis, without collateral evidence or personal observation, to form an accurate estimate of its absolute or relative frequency.

From my own observation, and the testimony of persons competent to judge, the disease would appear to be of more frequent occurrence here, especially in the central and northern parts of the Vale, than in many other districts; but it is, doubtless, considerably more rare than other eruptive diseases of the animal, although I am aware that the fact of its occurrence may not always transpire, unless a milker need surgical assistance, or the medical inquirer be constantly on the watch. My own observations do not extend beyond a period of nineteen years, during which time vaccination has made great progress among the peasantry, and, consequently, diminished the number of individuals likely to be the subjects of the casual disease in so severe a form as to require medical attention; yet I am inclined to believe, from all the information I have been able to procure, that the

cow-pox is not so often met with here as it was forty or fifty years ago. But upon this point of course I speak with much hesitation, especially when it is seen that so much uncertainty attends all general inquiries into the subject. The lack of discrimination amongst those persons from whom we seek information is not only a formidable obstacle to successful investigation, but has been the source of serious and often fatal consequences to themselves. Contagious eruptions on the teats and udders of the milch cow, communicated to the hands of the milkers, producing considerable local irritation, and much constitutional disturbance, often interrupting their avocations, and occasionally confining them to bed, have not only proved the source of much misinformation, but have imparted to many a confident assurance of safety from small-pox, which subsequent attacks of that disease, by leading to particular inquiries, have proved entirely unfounded. I have met with several instances of this kind, where, upon investigation, no doubt could be entertained of the delusion under which these individuals had been labouring for several years. Often, too, I have had the good fortune, by a careful inquiry, to discover many who were unconsciously exposed to the like danger, and who, by a successful and perfect vaccination, have been saved from a like fate.

Although the casual cow-pox in man is mostly found on those who have not previously gone through variola or the vaccine, it is by no means rare to meet with it on persons who have passed through the latter, and a few who have had the former disease. It is no novelty to see individuals who have taken the casual disease more than once, at various intervals, but not severely; and now we often see cases after vaccination, at periods of from two to fifteen years, of different degrees of severity, not always, but often proportioned to the time elapsed, many declaring their symptoms to be more distressing than those which they remembered of the previous vaccination.[1] On the other hand, we now and then meet with persons, who, without any protection, have used every endeavour to acquire the disease by milking, but have failed amidst their more fortunate fellow-labourers.

As in the cow, so in man, it does not appear always necessary that the skin should be visibly fissured or abraded to insure infection,[2]

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[1] In estimating the degree of comparative severity in the symptoms of such cases, we ought not to overlook the influence of age. I may here also add that I have several times succeeded, with ordinary *humanized* lymph, in producing modified vesicles, with smart constitutional symptoms, on persons who, from seven to thirty years before, had had the casual cow-pox severely.

[2] One of my medical acquaintance in the neighbourhood, who had been engaged, four or five years ago, all the morning in vaccinating, and had wiped the lancet on his pocket handkerchief, on his return home unconsciously vaccinated his infant son on the right ala nasi, by the application of the handkerchief to this part. The child suffered severely, and bears now a large deep scar in testimony of the event.

although very often we find those conditions in existence. A thin and vascular skin seems capable of absorbing lymph if copiously applied and long enough retained.

The parts upon which the disease is commonly observed are the back of the hands, particularly between the thumb and fore finger, about the flexures of the joints, and on the palmar, dorsal, and lateral aspects of the fingers. The forehead, eyebrows, nose, lips, ears, and beard, are often implicated from incautious rubbing with the hands during, or soon after milking. In women, the wrists and lower parts of the naked fore-arm, coming in contact with the teats, are apt to be affected. If the skin of the hands be very thin and florid, especially if chaps and fissures abound, the individual often suffers severely, having soon after the decline of the disease, abscesses and sinuses of the subcutaneous cellular tissue, and often considerable swelling and inflammation of the absorbents and the axillary glands.

The inflamed spots or papulæ which announce the disease are more circumscribed, better defined, harder, deeper, and more acuminate than the papulæ produced by some of the other contagious eruptions of the cow. They vary in colour from a deep rose to a dark damask or purple hue, according to the vascularity and texture of the parts affected. If the papulæ be small, there is often no perceptible central depression in the early period of their change to the vesicular state; but they exhibit an ash-coloured bluish or rather acuminated apex, which gradually becomes relatively flatter as the base enlarges and elevates, when the central depression is more obvious, and exhibits a yellowish tinge. Vesicles of this size become more or less elevated in their centre on the development of the areola, retaining their yellowish tinge. Larger vesicles, especially on the back of the hand and sides of the fingers, have a well-marked central depression in the early stage, and often a livid or irregularly ecchymosed appearance, similar to what is frequently observed on the cow; when fully developed, they present a bluish or slate-coloured hue, which increases in depth, and is more conspicious towards their decline.[1] This bluish colour, though very common, is often absent, even in some of the vesicles on the same hand. It evidently depends upon and is influenced by the vascularity of the part, the greater or less translucency of the epidermis, the quantity of lymph, the depth and extent of the vesicle. When the epidermis is stripped off from such vesicles, the zone-like adventitious membrane appears diaphanous, and has a bluish or livid hue, derived, doubtless, from the highly congested state of its vessels; here and there are often seen spots of actual ecchymosis.[2] Where the epidermis is thick, the

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[1] The plate of the causal cow-pox on the hand of Sarah Nelmes, *(Jenner's Inquiry*, 1798,*)* is a beautiful and faithful delineation of the disease on a fair skin.

[2] This hue and some of these appearances are often seen in other vesicles:—eczematous vesicles, produced by various irritants, especially tartarized antimony;

vesicles are generally well defined, circular or oval, if the parts will admit, and have only a light slate-coloured tint in the centre; but more frequently this colour is superseded by an opaque white or a dusky yellowish hue. Where the skin is loose, thin, dark, or dusky, the vesicles are jagged, irregular, and puffed at their margins, and, saving the central depression, very much resemble a scald. In size they vary from that of a vetch to a fourpenny piece, sometimes larger, especially when depending on a wound or extensive fissure. The vesicles are frequently broken, or, when the epidermis is thin, spontaneously burst, causing deep sloughing of the skin and cellular tissue, and ulcerations, which slowly heal. There is often, consequently, much attendant local irritation, and considerable symptomatic fever.

Although there can be no doubt of the greater severity of the local and constitutional symptoms attending the casual cow-pox on the hands, &c., it is equally clear that these symptoms are greatly aggravated by the rupture of the vesicles on parts so vascular, tense, and sensitive, and subject to motion. There is the same variety in the period of their occurrence in this, as in the inoculated form of the disease with ordinary lymph. In some, long before much vesication is apparent, the constitutional symptoms are well marked—three or four days before the appearance of the areola; in others, they are not complained of till the areola is well developed. There is a corresponding variety also in the intensity of the symptoms which often distinguishes different ages and temperaments under ordinary vaccination. Instances are occasionally met with, (arising probably from an insufficient application of lymph, or a local or constitutional indisposition to receive the disease in the usual way), where the vesicles are imperfectly developed, and there is little or no obvious constitutional disturbance, exhibiting a marked contrast to the local or general effects on other individuals affected at the same time from the same source. I have seen such cases followed by distinct though mild small-pox. From these occurrences, and others presently to be related, I have been accustomed to consider milkers liable to small-pox, contrary to their own expectations: first, from having been the subjects merely of the spurious diseases; secondly, from imperfect vaccination, at a late period of the disease, with *deteriorated* and purulent virus, or even with *perfect* lymph, of which they had not at the time been sufficiently susceptible.[1]

In general there is no great difficulty in distinguishing the casual vaccine on the hands, &c., from other eruptions caught from the cow; but I have seen many mistakes committed by those who ought to have known better, from a hasty inspection, and a neglect in ascertaining the period of the disease. The white vesicle will, on some

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the vesicles of herpes zoster, &c., at their acmé or towards their decline; apthous and other vesicles on the hands of the milkers; but in these last vesicles this colour is generally confined to the base and outer margin.

[1] See section "Primary Lymph," next page.

hands, approach very nearly to the form and appearance of the vaccine vesicle in its declining stage. On very thick skins, about the sixth or seventh day of its existence, it sometimes appears as a raised, circular, well-defined, firm vesicle, with a small violet or pink areola, and a slight central depression, with a light brown discolouration. But, on examination with the lancet, it is found neither cellular nor possessed of fluid contents; it is in a state of dessication, and has retained this appearance and its integrity so long on account of the thickness of the epidermis.

Papular, vesicular, and bullous eruptions, are occasionally seen attendant on casual cow-pox, especially in young persons of sanguine temperament and florid complexion, at the height or after the decline of the disease. They are generally of the same character as those known to attend the inoculated disease; but now and then we are told by the patients that these eruptions, either solitary or in clusters, resemble the vaccine vesicles. They seldom meet the eye of the practitioner; but occasional scars, in the situation pointed out, would induce the belief that such do sometimes occur as secondary vesicles.

PRIMARY LYMPH.

It has already been stated that to procure primary liquid lymph, in a condition fit for use, is a task of no ordinary difficulty; the most vigilant and active endeavours too frequently proving unavailing. Acuminated vesicles, containing a thin, serous, and straw-coloured fluid, and of course of little value, more commonly vesicles broken and nearly destroyed before that period has arrived, are often all that remains. Often, too, there are no crusts present or in prospect that can be depended upon. Unless the disease arises in a large dairy, and a consequent succession of cases occurs, it will seldom happen that vesicles are found capable of yielding that which is sought for. More frequently than would be suspected, the practitioner will have the mortification to find on his arrival, that, from the lateness of his information, a whole dairy of cows has passed through the disease, and he can scarcely find even a useful crust. The hands which have damaged the vesicles have also prematurely removed the crusts. Still a careful inspection of all the subjects should never be omitted; *primary* crusts should be sought for on the lower part of the udder and around the base of the teats. During this search it is not improbable that small vesicles of later formation may be found yielding efficient lymph.[1] A recollection of the real and apparent anomalies

[1] Vesicles which appear either between the commencement of the areola and its full development (from the ninth to the eleventh day), and which, in many instances, as in man, would appear to depend on the scanty or imperfect application of lymph to the mouths of the absorbents; or, still more rarely, and needing a careful inspection, vesicles of secondary formation arising after the twelfth day, and during the period of strictly vesicular desiccation. Vide page 537.

of the eruption, and a little experience, will detect other resources which might be overlooked or disregarded.

The best lymph is to be obtained from perfect vesicles before the period of acumination; after this period it is less to be depended on, particularly if very abundant, thin, or discoloured. Taken immediately before acumination, it is quite as active as that of an earlier date. In the earlier period, from the fifth to the ninth days, it is often scarcely possible to obtain it in any quantity except the skin of the part be very thin and lax. Lymph from a vesicle which has not acuminated, even if turbid, should not be rejected; it will often succeed when limpid lymph from an acuminated vesicle will fail. Acuminated vesicles which have been broken are rarely to be relied on; and vesicles which have been broken at an earlier period are not much better, and, on account of their liability to afford more than the specific secretion, may prove highly objectionable to some individuals. Entire unacuminated vesicles, or vesicles with central crusts, should be sought for where they are least exposed to injury, viz., on the lower and naked parts of the udder, and the adjoining bases of the teats; but as there is some difficulty in obtaining lymph in sufficient quantity from these sources, the greatest care and circumspection is necessary. It is impossible to exercise too much delicacy in the proceeding. It is scantily secreted, as before stated; the exudation of blood will obscure, and the sensitiveness of the animal under a rough manipulation sometimes altogether prevent, the process. The puncture should be made with a sharp lancet as near the centre of the vesicle as possible, and the epidermis be gently raised to a moderate extent around the discoloured or most depressed part. Slight pressure, either with the blade of the instrument or between the thumb and finger, if done with tenderness, will enable the operator, after some time, to charge a few points with the slowly exuding lymph. Patience and a treble charging of the points are always to be recommended. From what has been stated in another place, it will be understood that the puncture at the elevated and indurated margin of the vesicle will be perfectly useless, as it yields only blood; it may be pernicious by irritating the animal.

Vesicles with central crusts will be found perhaps more convenient, and nearly as productive as those just mentioned, particularly if the crust be small, and the margin of the vesicle tender, hot, and tumid. The crust may be wholly removed or pressed on one side, the epidermis underneath may then be carefully raised if the lymph does not soon exude, and a perfectly limpid fluid, in small quantity, can thus be procured.[1]

When we are, as too often happens, deprived of the above advantages, we may yet succeed in procuring useful substitutes for liquid lymph in — first, amorphous masses of concrete lymph; secondly, central

[1] Small superficial vesicles are often more yielding than contiguous larger vesicles more deeply seated.

irregular crusts; thirdly, vesicular crusts or desiccated vesicles. The first are often found upon or in close proximity to broken vesicles; and are either colourless, like crystals of white sugar candy, or of a light amber colour, resembling fragments of barley sugar, according to the period of their escape, and the length of time they have been exposed to the air. With a few drops of cold water they may be reduced again to the liquid state, and employed with a probability of success. The central rough and irregular crusts, often more or less conical, occasionally contain an admixture of blood or some discolouring secretion or other adventitious superficial coating: the more transparent and the nearer a dark brown the better. Desiccated vesicles should be carefully abstracted by the milker before they are casually removed or spontaneously fall, and those only of primary formation, the model of a vesicle, dark brown and somewhat translucent, should be retained.[1] Secondary and tertiary crusts are of scarcely any value: these are more or less thin, ill defined, or irregular in form, of a dirty yellow or yellowish brown, more transparent though not unfrequently more dusky and opaque, containing a large admixture of concrete blood and pus.

Good crusts, treated in the manner first suggested by Mr Bryce for human vaccine crusts,[2] may as frequently be depended on, in suitable subjects, as liquid lymph, and more frequently than much of that which is commonly met with. After all, however, where there is often so little choice, we must not be too fastidious as collectors, nor rely too confidently, as experience proves, on the precepts deduced and the expectations formed from the use of the humanized vaccine. It will frequently happen that much of the lymph taken in confident assurance of success, will, from causes presently to be alluded to, prove utterly unavailing in propagating the disease in man; and, on the other hand, some that is taken from necessity, and in despair, will be followed by unexpected and complete success. With the exception before mentioned, in reference to broken or irritated vesicles, disappointment from failure is all that results from the use of late lymph; and the best lymph, it will shortly appear, will not always avert such an occurrence.

VACCINATION OF MAN WITH PRIMARY LYMPH.

The rarity of the natural cow-pox, the difficulty of obtaining information of its existence, even in the very neighbourhood where it arises, the mischief so often done to the vesicles by the milkers, and the advanced stage of the disease before inspection, preclude the frequent *practice* of vaccination with primary lymph, if it were neces-

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[1] See page 534.

[2] *Practical Observations on the Inoculation of the Cow-pox.* By James Bryce, F.R.S., &c. Edinburgh, 1809.

sary or desirable. But there are also formidable obstacles to the *success* of the process, even when primary lymph is obtained in all its purity. These impediments to successful vaccination seem to arise from two causes: first, the natural difficulty with which animals of one class receive a morbid poison generated in animals of another class; and secondly, deficiency or imperfection in the mode of communication. Although it is admitted that man more readily receives some of the morbid poisons of the lower animals than they receive his, yet it would appear that even in him there are various degrees of susceptibility, and that some individuals seem altogether insusceptible under ordinary circumstances. This certainly may be asserted with respect to primary and imperfectly assimilated vaccine lymph, at least by the usual mode of transmission. The following facts, which have often fallen under my own observation, and which have been repeatedly witnessed by many of my medical acquaintance, seem to me to justify these conclusions.

1. More than half my attempts to vaccinate with primary lymph, taken from vesicles at a proper stage, and possessing all the characteristics of perfection, have entirely failed. The same individuals have immediately afterwards been successfully vaccinated with dry or liquid lymph which had been long current in man.

2. A small number, vaccinated from the same primary sources, afforded results in various degrees of imperfection. In general, the seventh or eighth day has elapsed before any indications of infection have appeared: a dark red pimple has slowly advanced, and gradually assumed a tubercular or tuberculo-vesicular form,[1] being either perfectly lymphless, or a dark red tubercle on the thirteenth or fourteenth day with a scanty supply of lymph on its acuminated summit, with a moderate areola, slowly subsiding, attended by very trifling or scarcely appreciable constitutional symptoms. Nearly all these subjects have been successfully re-vaccinated with ordinary lymph, from periods of nine to eleven months, in different degrees of modification, but always with a nearer approach to perfection.

3. A still smaller number, vaccinated from the same primary stocks, have furnished vesicles in the highest degree of beauty and perfection. But even in many of these there has been more or less delay in the full development of the vesicles; and in nearly all, the number of the vesicles has seldom equalled one-half of the punctures.

4. Precisely similar phenomena of entire failure, imperfect, or complete vaccination, with all their attendant circumstances, have followed the use of lymph from perfect casual vesicles on the hands of the milkers; and the like results have frequently attended the early removes of lymph from the most perfect primary vaccinations.

5. The whole of these phenomena—abortive punctures, tubercles, tubercular vesicles, imperfectly developed, and perfectly normal

[1] Similar to those of earlier formation and more rapid progress, which often follow re-vaccination.

vesicles—may be frequently seen co-existent on the same individuals, either from primary lymph, casual lymph, or the early removes of both from any given vesicle.

6. Although, with the few exceptions previously stated,[1] the copious, repeated, and long-continued casual application of cow-pock lymph to a highly sensitive, vascular, mobile, and extended surface, with or without abrasions, chaps, or fissures of the cuticle during the process of milking, proves a more perfect and successful mode of communicating the disease, yet it is abundantly obvious that even this superior mode is in general more prompt and certain in infecting the cow than the milker.[2] Other facts, which will presently appear, and some that will be related in the next section, might here be adduced if it were necessary, but it is expedient to pass on to the consideration of the particular phenomena of primary vaccination.

Whether vaccination with primary lymph—lymph direct from the cow—be successful or not, I have always observed that the puncture which receives it exhibits on the next day a remarkable and unusual degree of redness, more or less intense and diffused according to the habit of body and the condition of skin of the recipient. It resembles the prompt inflammatory blush often attendant on re-vaccination, the vivid redness which marks the haste of spurious vesicles, or still more nearly that early indication of effect so well known as the unwelcome harbinger of what has been called the "irritable vesicle," which ordinary lymph will often produce in strumous or erysipelatous habits, with light and fair complexions, thin and florid irritable skins, and a flimsy cuticle incapable of concealing the network of plethoric capillaries beneath, and where the smallest puncture produces a torrent of blood, and the mildest lymph proves a destructive poison. This early and vivid blush, which follows the insertion of primary lymph, gradually declines on the third or fourth day, and, where the vaccination fails, soon entirely disappears. When successful, and the vesicle is normal or nearly so in its progress, the redness becomes more and more concentrated, and at length blends with the red elevation of the vaccine pimple.

But there is often an interval of longer or shorter duration between the decline of the blush and the commencement of the first stage of the disease, papulation being sometimes postponed to the sixth, seventh, eighth, ninth, or even tenth day. Hence there is much irregularity in the period of full development of the vesicles, and the areola is frequently not complete till the eleventh, twelfth, thirteenth, fourteenth, or even sixteenth day. About this stage of the areola, especially on children, small supernumerary vaccine vesicles in miniature often appear within its limits, sometimes on the shoulder, and still more rarely on the face and body. The well-known papular, vesicular, and bullous eruptions, occurring in such subjects are frequently observed. The colour and extent of the areola vary of course in different subjects, being very florid and extensive in the sanguine

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[1] Page 539-541. [2] Vide Casual Cow-pox and Vaccination of the Cow.

and irritable, pale and limited in the leucophlegmatic and apathetic; but at its height, and about the decline, there is considerable induration of the surrounding integuments in all, influenced by the same circumstances certainly, but manifestly existing to a greater degree than is observed in corresponding temperaments from ordinary lymph. The areola, under these circumstances, *declines and revives*, continuing to exhibit a brick-red or purplish hue while the hardness remains, indicative of deep-seated inflammation in the corium and subjacent cellular tissue.

The process of desiccation, even in perfectly normal vesicles, is generally protracted. Although not quite so late in the thick clear skins of infants and some young children, even here it will be seen for some days confined to the centre, while the circular margin remains of a dull or dirty yellowish white or pale horn colour, retaining a fluid to the sixteenth or eighteenth day. When the regular vesicle is neither ruptured nor spontaneously bursts, the crust is often retained to the end of the fourth or fifth week, bringing away with it a circle of the corium, often the whole depth of it, and some of the subjacent cellular tissue, leaving a deep foveolated red cicatrix, or a yellow foul excavation, which ultimately furnishes the pink, shining, puckered aspect of a small-pox scar. But it too often happens, especially in subjects with thin and vascular skins, that the vesicles burst or are easily broken during the height or about the decline of the areola; and if the subject be of a strumous or erysipelatous diathesis, of full habit, and possesses an irritable skin, secondary inflammation is set up and becomes more diffused and deeper seated, the corium is destroyed completely, and a slough of the subjacent tissue is soon manifest, the surrounding integuments are deeply indurated, often a multitude of ecthymatous pustules are formed on the enlarged papillæ, and on other parts of the skin, and abscesses in the cellular membrane and axillary glands ensue, causing proportionate constitutional irritation. When the slough separates, the wound often has the appearance of a caustic issue, seeming capable of receiving a small marble. All this mischief, however, generally soon subsides: the ulcers speedily clean, throw up luxuriant granulations, needing repression; the surrounding irregularity and superficially denuded skin soon heals, and an unexpectedly small circular or oval, red, shining, puckered, elevated, and uneven cicatrix succeeds.

Character of the vesicles, and other effects of the lymph.—Vesicles produced by primary lymph, like those from good ordinary lymph, are not only subject to all the well-known modifying contingencies of temperament, habit of body, quality and condition of skin, form and extent of puncture; but their character, as might be expected from what has been stated, is subject to still further variety from special qualities in the lymph itself. These qualities are not equally manifest in all subjects. The vesicles very often exhibit a bluish, ecchymosed, or livid appearance, not only at their commencement in thin skins with an active circulation, but are more than usually blue towards their decline where such conditions are absent. Yet this

effect cannot be produced in all cases. Although the vesicles are often remarkably large and finely developed, yet they are commonly not more so than others produced by ordinary lymph, and could not be distinguished from them but by the circumstances above stated, when describing the extent and depth of skin affected. They are not unfrequently less fine and much less developed than other vesicles, but they admit of very remarkable improvement by transmission of the lymph through a series of well selected subjects. By this process, also, in a very short time, most of the defects and some of the evils connected with the use of primary lymph may be dissipated, and the lymph rendered milder and more suited to general purposes.

In attempting this, it will be recollected that it is quite possible to lose the stock unless a large number of suitable subjects are at hand. Children are the best certainly for the purpose, and such should be selected as possess a thick, smooth, clear skin, and have a dark complexion, and are not too florid; but still plump, active, and healthy. Infants of this description are decidedly the best; their vesicles, we know, are almost always better defined, less liable to burst or be broken, have less areola, and, in fact, if between four and nine months old, are capable of furnishing with this lymph all that can be desired, with the least amount of risk. By a steady and judicious selection of these and similar subjects, in a few (even three or four) removes, the severity of the local mischief becomes manifestly materially diminished, the vesicles acquire a magnitude and beauty often greatly superior to what is daily witnessed, and, in a short time, the lymph may be transferred with safety to others, even more sanguine and robust, where, it is well-known, lymph, if good for any thing, will produce the finest and most perfect vesicles.

Three or four punctures, according to the size, age, and habit of the patient, when the lymph is thus thoroughly assimilated, will in general be amply sufficient; a less number will be safer for some subjects.

Too much care, however, cannot be taken at all times to avoid rupture of the vesicles, or what might and does otherwise pass off with moderate inflammation and the erosion of about half the texture of the corium, leaving a magnificent well-excavated scar behind, will most certainly lead to great inconvenience, and probably to all the mischief formerly described as resulting from the first remove. As we advance we find the necessity of preparing the most objectionable subjects, and the advantage of subjecting many of them to the same preliminary treatment which the best and most expert inoculators of small-pox formerly so successfully adopted for their patients; for it is a long time before some individuals can be safely vaccinated with this active lymph, even though taken from the mildest vesicle.[1]

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[1] I have seen too much evil result from a neglect of such salutary precautions, and have several times positively refused to vaccinate, with very active lymph, certain subjects with the obnoxious characteristics, mistaken for health, till they have been reduced to propriety. There are a few such who for a long time must be avoided—*cane et pejus angue.*

In the succeeding removes, among a diversity of subjects, there is of course endless variety in the character of the vesicles. They are meagre, ordinary, or equally fine as before, some bold and elevated, with rounded margins, turgid with lymph, or, having narrow acute margins and broad centres, yielding as abundantly, thick and fleshy, or flat and level with the skin, affording scarcely any lymph on the eighth day,[1] without the least abatement of any needful activity; while every now and then we have all the characters of the earlier removes, and all the inconvenience of primary lymph. It is quite allowable to admire, and perfectly right to endeavour to produce, beautiful vesicles; but we must admit our failures in such attempts while relying on lymph alone: the soil is of as much importance as the seed. Lymph from the smallest vesicles, if normal, will, in a good subject, furnish in its turn the finest vesicles, and *vice versâ*. We are constantly reminded, too, that the finest vesicles often exist where there are the least indications of constitutional disturbance, and that remarkable intensity of symptoms is seen where the vesicles are strikingly small.

In using primary lymph and its early removes, however we may be disposed to attribute to it the power of aggravating the constitutional symptoms in certain temperaments well-known to be obnoxious to them, yet we are also forcibly reminded that the very same lymph will appear to produce scarcely any appreciable symptom in others. Roseola, lichen, &c., with vomiting, diarrhœa, delirium, &c., arise in some, while in others mere acceleration of pulse is observed without complaint. In many instances the symptoms appear as early as the fifth day, on the sixth and seventh very often, with morning remissions and evening exacerbations, terminating on the ninth, or augmenting till the height of the areola. In other instances they are not manifest till the eighth or ninth day, sometimes later; occasionally they are scarcely observable. In some subjects a single vesicle will be attended with earlier, more severe, and longer protracted symptoms than four or six will produce in others.

Although the greater part of my experiments with primary lymph and its early removes have exhibited the above as its qualities and accidents, I think it not improbable that primary lymph may vary in these respects, and be modified by season and other circumstances, both individual and local. In passing through a large number of cows, it has appeared to me generally milder in the latest than in the first subjects, and I have certainly succeeded in effecting a mitigation by artificial means while in the prosecution of experiments with another view. As I shall have to recur to this subject, and to a detail of the effects of other kinds of lymph, I think it better to proceed at once to a narrative of the experiments themselves.

(To be continued.)

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[1] But in these and other vesicles the lymph is abundant on the tenth and eleventh day, perfectly limpid and quite efficient.

REVIEWS.

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Eléments de Chirurgie Vétérinaire. Par J. GOURDON. Paris et Toulouse, 1854–1857.

Elements of Veterinary Surgery. By J. GOURDON. Paris and Toulouse, 1854–1857.

Praktisches Handbuch der Chirurgie für Thierärzte. Von D. C. H. HERTWIG. Zweite Verbesserte Auflage. Berlin, 1859.

Practical Handbook of Surgery for Veterinarians. By Dr W. HERTWIG. Second Edition. Berlin, 1859.

Thierärztlicle Instrumenten und Verbandlehre. Von Dr L. FORSTER. Wien, 1860–61.

Treatise on Veterinary Instruments and Apparatuses. By Dr FORSTER. Vienna, 1860–61.

WHEN we look back fifty years ago, and examine the amount of intercourse then existing between different countries, we cannot be surprised that our British works of science, and of natural history especially, were behind the day in information. A great botanist, living in Germany, Italy, or France, might be ignored by the great mass of men here; and people were making discoveries at different parts of Europe, or of the world, which only oozed out very generally in the scientific community on the occasion of a paper war between two or three claiming priority in the marvellous investigations and unexpected results. One of our ablest naturalists, who has contributed very largely to the literature of science, only recently stated that, when he began to write on botany—and the gentleman has yet some time to live to attain man's allotted age of three-score years and ten—the English works indicated the most remarkable ignorance of all that the great continental botanists had been for years studying and teaching.

We are now in the same position in veterinary science in Great Britain as the zoologists and botanists were at the beginning of the present century. Assuming a self-sufficient tone, many declare themselves perfectly independent of what a Frenchman or a German can teach them, especially regarding veterinary operations. There can be no doubt that many facilities afforded to British veterinarians in acquiring a very perfect knowledge of animals would be greedily availed of, and truly of great price to the members of our profession abroad, but it is probable that the recent prominence of the veterinary element, in a committee to suppress the barbarities in the French schools, will somewhat affect a cordial understanding, which has been of very slow growth. We have strongly condemned the cruelties which have now

been checked by the iron arm of despotism; but, on the other hand, we are prepared to demonstrate that our continental confrères have advanced rapidly in operative surgery, and have sought knowledge from sources unknown to our professors here, though not requiring the infliction of unnecessary wounds on uselessly tortured animals.

Humanity to brutes is the highest recommendation for the study and practice of our art; and to prove a genuine humanity, the man who makes capital of other people's shortcomings should prove his earnestness and consistency by unflinching perseverance. Such has not usually been the case, as our readers too well know.

There are some names which we recall to our minds, in speaking of veterinary operations, as those of men who have contributed most to this branch of our profession. Wolstein and Brogniez, Chabert and Girard, Dieterichs and Hertwig have enriched our armanentaria, suggested new operations, and improved on old methods of performing the older and better known ones.

English authors have not yet given us a systematic treatise on operative veterinary surgery, and if we peruse the many general works on the veterinary art, published in this country during the present century, we find a very scanty amount of material for such a book. Is this because the subject is very limited? Our German brethren think not, and the French veterinarians, less exhaustive and more prolix than the Germans, write ponderous volumes on a very small section of the subject. Mr William Percivall proved a good gleaner; but the praiseworthy efforts of one man might have been forerunners and incentives to others, whether teachers or authors, in order to establish sound principles and certain rules of good surgery, which would save much suffering and mutilation.

Human surgeons recognise a difference, and define the limits between good and bad surgery, so that even junior students soon imbibe rational ideas on the subject. Veterinary surgeons have not usually clear notions in this respect. We are constantly seeing instances in the hands of reputed good practitioners, of much destruction when tissues should be saved; using caustic injections when a diseased tooth or perhaps a diseased bone, has to be removed; cutting through some important structure to let out some pus, when a little patience and more skill might have prevented the formation of a troublesome fistula; pushing fingers into a hot abscess, *to break down the pyogenic membrane* (!); introducing the same into the scrotum of horses a day or two after castration, *to break down adhesions;* using digestive ointment when water dressing should be applied; in fact, meddlesome, troublesome, and dangerous practices, only pardonable because the individuals have never been taught, have never had an opportunity of reading, and have never learned any better.

The works we purpose to bring before the notice of our readers on this occasion are of two kinds. The most comprehensive treatise, by Hertwig, is devoted to a history of surgical disease, and is a mine of great wealth—a practical handbook, inexhaustible from the details

culled by an able and industrious Professor, during many years' practice in the largest and best school in Europe, besides the very varied information derived from a thorough knowledge of veterinary literature.

Messrs Gourdon and Foster have to deal with operative surgery, and the latter has, by adopting the plan of describing the shape and uses of instruments, and various forms of apparatus, condensed within small space, perhaps a larger amount of practical instruction than Gourdon has succeeded in conveying through his more complex and bulky volumes.

The great difficulty, encountered at the very outset of his labours by the author who proposes to write a systematic treatise on any branch of medicine, is, What system shall be followed out? All are defective; and probably Hertwig has chosen well in adopting a classification of diseases and injuries in accordance with their nature, rather than treating the many injuries and maladies of different organs individually and respectively. All inflammations are considered under the first division, and, after a general history of inflammation, we find the various forms of ophthalmia, inflammation of salivary glands, lymphatics, tongue, jugular veins, umbilical cord, testicles, mammæ, vagina, and vulva, &c., &c.—in fact, all inflammatory attacks of superficial organs treated of most fully.

In the second division, Hertwig considers all the contusions, such as saddlegalls, fistulous withers, poll-evil, capped elbow, capped hock, &c. In the treatment of poll-evil, Hertwig is one of the earliest advocates for bold incisions, practised without fear and hesitation. He applies cooling lotions in mild cases, and cantharides ointment in the severe forms.

Lacerations are treated in the third division, including break-downs, lacerations of tendo-achilles, besides sandcracks and other lesions. A very important chapter on lacerations of the flexor metatarsi draws attention to the peculiar symptoms of the lesion, and to the fact that it is not always diagnosed with the certainty which its characteristic symptoms should ensure.

Wounds occupy about 130 pages, over which the fourth division of the work extends. Under the head, General Treatment, and particularly with reference to granulating wounds, Hertwig does not appear to have followed out or learned the simple practice of cold water dressings, and recommends the salves and ointments which are too generally used still, but which can with great advantage be discarded. Many valuable remarks are made on the different kinds of wounds.

In a very complete section of the treatise—the fifth—fractures are considered, and the immoveable apparatus, especially the plaster of Paris bandage, is advocated very warmly and very justly.

Dislocations occupy forty pages, and a very full description is given of every form of accident which may be included under this head. The subject of prolapsus is next taken into consideration, and the

first subject under this head is prolapsus occuli, or protrusion of the eyeball, which occurs in dogs occasionally. We have witnessed cases of this description, and, when seen early, the globe of the eye may be replaced without much difficulty, and cold water dressing or astringent applications must afterwards be used. Hertwig says that, if there be any delay and difficulty in returning the eyeball, the opening through the lids must be enlarged by a small incision at the outer canthus, and this enables the organ to fall back readily into its socket. It is, moreover, of the greatest importance not to allow the animal which has suffered from such an injury any food for 24 hours after having replaced the globe, because the movements of the coronoid process of the inferior maxillary bone interferes considerably with the condition of the parts in the eye socket, as the tendency to inflammation is great. If the prolapsus has existed from 10 to 12 hours, and the cornea is dry, Hertwig recommends the extirpation of the eyeball.

Hertwig affords us much valuable information on the subject of Herniæ. There is not much original, but a very satisfactory description of the different forms of Hernia observed in our domestic animals. I may particularly refer to his chapter on internal herniæ in cattle, known in England by the name of Gut-tie.

We think that on the subject of distentions and dilatations, which occupy considerable space, a little has been sacrificed to the system adopted in the book. To consider sprains, curb, and break-down independently of the subject of shoeing and lameness in general, is a plan that we do not approve of, in a practical point of view.

The different forms of closure of natural passages or cavities are carefully described, such as of the lids, pupil, anus, vagina, uterus. Again, we do not approve of the combination with plugging of the arteries and anchylosed joints. A useful chapter is devoted to the accumulations within cysts or natural cavities, as in the cases of distended guttural pouches.

The subjects of Hypertrophy, Atrophy, Morbid Products, Concretions, Ulcers, and Fistulæ, conclude this very interesting and highly instructive volume. We admire most in Hertwig the complete way in which every subject he treats has been studied. All information has been carefully gleaned, and on any point reliable information, and the accumulated experience of veterinary writers, is furnished us. It is certainly not too much to say, that Professor Hertwig's work should be translated into every language in which veterinary works are written. Unfortunately, translations do not pay, and publishers prefer a short treatise declared practical, and written in a racy style by some penny-a-liner, to the elaborate treatise which is chiefly relished by the scientific man. The existence, however, of works such as those we receive from Germany, and which we have so frequently recommended, suggest that some means similar to those adopted by the Sydenham Societies should be put into operation, in order to obtain

for Great Britain the privilege of translations, at a moderate cost, of all the best works issued on the sciences relating to agriculture.

Gourdon's *Elements of Veterinary Surgery* decidedly fill a gap in French literature, which was soon observed by its author. When we look at the treatises on Physiology by Colin, Anatomy by Chauveau, and Surgery by Gourdon, we must admit that that system is excellent which affords young men positions in veterinary schools, in which they are inspired by considerable emulation, and prepare for the chairs which are periodically becoming vacant. It is true, that Delafond, Bouley, Lecoq, Rey, &c., have published works of value since the professor's robes have hung on their shoulders, but they gained their positions by great exertion when in subordinate posts, and that scientific men may be young, when successful, authors, is demonstrated by the several manuals above quoted.

The three French schools adhering until lately to the system of *concours* for the appointment of teachers, have exchanged to no small extent in search of talent. Thus, M. Colin, who is at Alfort, was educated at Lyons; M. Gourdon, who is a pupil of the latter school, is at Toulouse; and M. Chauveau, who distinguished himself much as a student at Alfort, has for several years filled an important situation in Lyons. Though the system of *concours* is now abolished, the plan of training teachers by retaining them in colleges as assistants, is likely never to be abandoned, and we should wish to see it carried out here. As we are specially referring to authors, we must not omit to mention, that several practitioners in France have a very substantial reputation for their literary productions.

In the forthcoming number of the *Edinburgh Veterinary Review*, we shall allude more fully to the merits of the works by MM. Gourdon and Foster.

(To be continued).

EDINBURGH VETERINARY REVIEW
AND
Annals of Comparative Pathology.

THE CLEVELAND AGRICULTURAL SOCIETY'S ANNUAL SUMMER SHOW AT YARM.

THE Cleveland Agricultural Society seems, according to the showing of its history, to have worked exceedingly well; several most decided steps in advance of prevailing customs of the time having been first taken by it.

One move, adopted for the first time in 1860, at Middlesborough, and repeated on the 15th and 16th of the present August at Yarm, is so linked with the veterinary art, constituting as it does a most important branch of it, that we cannot allow the occasion to pass without recording it in this *Review*.

The awarding of prizes to test the best horse-shoers, is the recently adopted plan to which we allude; and here it may be well to record the name of the individual, to whom, as we are informed, veterinary science, no less than the horse-owner and working-farrier, will be indebted for what we now consider a step in the right direction.

Mr Thomas Parrington, the Secretary to the Cleveland Agricultural Society, is the gentleman who projected and promoted the establishment of an award of merit as a means to encourage and test the best horse-shoer.

In announcing the conditions of the awards, the prospectus set forth that L.10 were to be given to shoeing-smiths for shoeing hunters, to be awarded in 1st, 2nd, and 3rd prizes, of respectively five, three, and two sovereigns each. Each competitor to forge a fore and hind shoe out of old iron, and to fit and apply the fore-shoe.

Eighteen competitors entered their names, and seventeen fine fellows came to the task, paid their five shillings entrance, and nobly went to work.

Most of the arrangements for the trial were good. Some required additions, and what we consider improvements; to these we shall refer presently. Once a right thing has been set on foot, it is easy to improve on it; we can all make the egg stand on its end when we have been shown how to do it, and it is no detraction from the merit of originators, that their schemes are generally found to admit of modification with advantage.

Our remarks on the past trial may be few—we are more anxious to throw out hints for future application. That a good beginning has been made was evinced by the workmen it brought together, and by the appearance of their earnest, honest faces.

We make suggestions now, the more readily, because in the early stage of the movement they may more easily take effect. Firstly, instead of the words, horse-shoer, we would suggest that the single word *Farrier* be substituted, and for hunters we would say *Horses.* As these suggestions are of more importance than at first sight appears, we shall explain, taking the last first. No doubt that in setting on foot this laudable means of testing the best shoer, the projector had keenly felt the requirement in his experiences as a sportsman, an agriculturist, and as an owner of horses. This was just one of those instances where a man kills two or three birds with one stone—by a single effort.

We doubt the ability and organised means of a Chancellor of the Exchequer to estimate the annual national loss in the value of horses through want of a better system of shoeing them, and a more difficult question still to solve approximately, is the degree of suffering inflicted on the same noble servant of man; but there is one phase of the question which we have never seen approached, viz., the hitherto discouraging, nay degraded condition of working-farriers. If it be true that the study for man is man, then we have a problem to solve.

As to the preference of the word Farrier, why attempt to change a word? In London, and to a great extent over England, the word farrier is applied solely to horse-shoers; it is true it was formerly mixed up and applied to men who treated the diseases of horses and other animals, and is still so to some extent; a stricter definition of its meaning would correct this: in France nobody misunderstands when the word *maréchal* is used; *manescalco,* in Italian, is equally definite. The word *smith* is so extensively used, and so indefinite, that we see no good reason to confound it in the art of shoeing horses, since the forging of iron, though forming a part of that important art, is the least difficult to acquire, and that most commonly at command; it is to be found on the surface.

If the class of men following the art of shoeing are worthy of the calling, their art is worthy a definite designation in our language, the want of which helps to illustrate the inefficient state of the art, and the degraded estimation in which it has been held. The word shoeing-smith, even now, is mixed up with that of bell-hanger, jobber, and wright; and so inadequately remunerated are horse-shoers, that the art is usually followed in connection with some other calling, be-

cause, in the present scale of payment for shoeing, a master cannot pay a rent and make a livelihood by it alone: hence we find it allied to the arts above-named, or to a veterinary surgeon's practice. The general working-smith does the shoeing, because his employer gives him the jobbing also, and he gains more by mending a poker, or doing any other little job that will occupy ten minutes, than by shoeing a horse—a work calling for knowledge and skill of a varied kind, and not easily acquired.

The reason why we would substitute the word *horses* for hunters may be briefly given. We believe that the right way to the attainment of required reforms in the art, is not to invite competitors to pursue a course of shoeing, according to customs for some special purpose; let each man bring his part, from whatever point of the compass he comes. If time permitted, we could adduce many weighty reasons for adopting the course we purpose, in preference to inviting competitors for shoeing hunters, race-horses, military, or any other class of horses. We shall never make good men by aiming to excel in these special parts; moreover, shoeing of hunters leaves a loophole for the indulgence of all sorts of whims. Badly as all classes of our horses are shod, relatively to their requirement, none are more unsystematically or unscientifically managed than hunters in the practice of shoeing; we may place race-horses and those used with street-cabs next on the list, for injuries they suffer and loss sustained, relative to their number, by shoeing.

How is competition amongst farriers for premiums to be turned to most account? This question seems to embrace the main point for consideration. We will assume that instruction to the farriers is required, and that, in order to test their relative merits, it would be advisable to bring them together periodically, and, by addressing them, increase the emulation of a whole class. Merely calling together a given number of farriers in any district, with their present confused and limited knowledge of the art they practise, proves comparatively little. Necessarily, the judges do not instruct each or any man as to what they require, their office being for the moment to judge, and not to instruct. Of the 17 competitors who worked at Yarm, no two pursued the same plan in their work; most of them, manually dexterous, expert in the use of their tools, lacked the instruction of the mind by which the hand can alone be guided. Painfully do we witness the paring away of the horse's hoof, and scooping out corners of it, though done in a most expert manner, and willingly would we have given a word of advice, but the men work on. The prize-men may be elated, and led to esti-

mate highly their own ability; their future employers also may erroneously say, 'Here we have perfection, of which the gained prize is proof.' These are so many false conclusions—the trial merely being one of relative manual ability. With these observations, we have nothing more to say at present, beyond heartily hailing the institution of awarding prizes to farriers, by the Cleveland Agricultural Society, as a most important step in advance, Such other details as we could suggest are comparatively trifling, the main thing being done—viz., the beginning; improvement is certain to follow, and that perhaps in a measure and in a manner the least expected.

THE FREE STUDENTSHIP.

THE value of an immediate object to work for is exemplified in the most satisfactory manner by the honours which are secured in various colleges by striving and intelligent students. Veterinary colleges have not offered any attractions to the veterinary students in the shape of prizes beyond a few silver medals, which are closed in solid boxes rarely to see the light. The New Veterinary College has initiated a system which admits of great extension hereafter, and which in all probability will prove a great help to many who are willing but incapable to spend much time in study, and need encouragement for vigorous efforts to attain a high position in the veterinary profession.

The announcement made last winter that, at the end of the Summer Session, all students entering the New Veterinary College in May would be admitted to compete for a Free Studentship as well as a Medal, was followed by many applicants and a good muster in attendance at the College. We truly believe, that at no time was such rapid progress made in the elementary branches of veterinary science and art by students, than during the three short months which the competitors devoted to their work this summer, and the result was a very keenly contested battle at the last, which was won by Mr William Henry Brooks of Lincolnshire; and second to him stood two, who had respectively been first at the monthly written examinations, viz., Mr John Adam M'Bride of Glasgow, and Mr Nicholas Carny of Manchester. In consideration of the merits of the papers written by the two gentlemen who were judged to stand equal, and second to Mr Brooks, they both were granted a silver medal.

The effect of the Free Studentship has been to induce junior students to master the elements of science which are not uncommonly

slurred over, as prizes are usually carried off by senior students. But in this case none but gentlemen who have never before studied in a college, and who are quite ignorant on entering, of the subjects they are to be examined upon at the end of the session, are admitted to compete. The prize is worth twenty-four guineas, a silver medal, and the prestige of proving the first man or dux of the year at college. We anticipate the happiest results from the continuance and extension of a plan that has been so successful in a first attempt.

PERISCOPE.

THE DISEASES OF THE PIG.

(*From the Scottish Farmer and Horticulturist*, August, 1861).

THERE are many admirers of the "payer of rents" who bestow as much care and attention to the sty as the Lord of the Manor does to his favourite horses. Cleanliness, good food, and regularity in feeding, &c., tend to develope a pigling into the proportions—frightful to the eyes of many—which ensure a prize at agricultural shows. We rather admire the cleanly-fed pig, not overburdened with fat, which many of the thrifty villagers in England rear, in order to eke out the scanty wages on which a large family has to be kept. Disease now and then appears amongst these animals, but one of the most frequent causes of death and blighting hopes is perhaps the hand of the quack, who, if consulted, should the pig seem out of sorts, may try his hand at giving it a dose of castor-oil, when, as in the process of shearing such an animal, he gets "more noise than wool," as a few loud screams precede the effect of the physic, which far more frequently kills than cures. There is no animal so easily choked as a pig; and we can mention several instances in which young practitioners have poured mixtures fearlessly into the mouth of a screaming pig, but only to feal a dead weight on their hands and see the poor animal stretched lifeless at their feet. It is, therefore, a rule that tasteless medicine in powder should alone be used for this animal, and the most valuable is tartar emetic. There is no medicine more generally useful in the diseases of the pig, and it is given in some cases in dozes sufficiently large to produce vomiting—that is to say, from five to ten grains in a little slop. It is better to give rather a full dose for such a purpose than too small a one, because if the effect is not at once apparent, the drug enters the system and does more harm than good. We do not advise the combination with calomel, but a very worthy rival to antimony in the estimation of some of the best informed veterinarians in the diseases of the pig is the white hellebore in doses of from five to fifteen grains. This drug is an active nauseant readily taken in food, and is regarded as a specific in the frequent and severe attacks of sore throat, which so often present a malignant character in the pig. But we must revert to the administration of tartar emetic in small doses, repeated at short intervals. About a third of a grain, with ten grains of nitre, given in a little slop several times a-day, and stopped when it induces sickness. In severe inflammatory affections, we can recommend this even more than the white hellebore. Although Youatt mentions antimony as an ingredient in many applications for this animal, it is not to be recommended, and we prefer cleaner mixtures than train-oil and sulphur, &c.; but half an ounce of white hellebore, over which a quart of boiling water is poured, constitutes a good lotion for this disease in the pig. White hellebore is, in some animals, a very dangerous poison, but the pig appears to resist its effects in a remarkable manner; and Tabourin, one of the most distinguished authors on veterinary medicines, says that the *poisonous* dose of white hellebore is unknown. As a useful purge for the pig, we may mention a couple of croton beans

bruised and mixed with food. Nitre and sulphur are amongst the remedies often of service, and easily administered in food.

The foregoing remarks on medicines to be used for the pig are, we think, called for in agricultural journals, because far too little attention is paid to the kind of medicine, and mode of administration to be adopted, in treating the disorders of the porcine tribe. Bleeding is the great and universal panacea; but we do not agree with Youatt when he says that "this is a most useful and necessary operation, and one which, in many diseases, is of vital importance." It is far less called for in the pig than other animals, and we cannot sufficiently deprecate the plan of docking a bit off the tail, or cutting the ear of the pig whenever he appears a little mopish. Paddy's story imparts a useful lesson. He bled the pig so often by cutting the tail, that in one attack the animal died, because, said Paddy, "he had no more tail to cut, and had to wait for it to grow again." The amount of blood lost by the tail is trifling, and the operation may be justly condemned as useless.

To see a sick pig is in the estimation of some even more rare than seeing a dead donkey, and it may be deemed a waste of time to devote valuable space to the consideration of the diseases of this animal. But there are those whose experience would indicate a heavy mortality, and it is undoubtedly the fact that very dangerous contagious fevers, destructive parasitic disorders, and a host of other maladies are to be witnessed in well-stocked sties.

Just as all diseases of the dog are called "distemper," many of those of the horse are termed influenza, and a large number in cattle are at once declared to be pleuro-pneumonia, so are all the diseases of the pig known by the absurd name of measles. We say absurd because there is no similarity at all between the many forms of disease termed measles in the pig and the same affection as seen in man. We could cite several instances of sudden deaths in the pig which veterinarians have declared to be due to measles, whereas this name has been applied by the better-informed exclusively to that speckled condition of the skin due to hydatids beneath it, and which hydatids—all members of the genus Cysticercus—pervade the soft tissues in the body, and if swallowed uncooked, produce tapeworm in man. This fact alone proves the importance of knowing more than is usually done regarding pig diseases.

We have recently been discussing the injurious effects of overfeeding horses, sheep, and cattle. We can furnish an admirable illustration of the *plethoric* state in pigs. Our readers must not forget that plethora signifies that condition of the system when the blood is in excess both as to quantity and richness, but chiefly the latter. A brewer in Edinburgh kept a few young pigs to supply himself with choice morsels of pork and ham. During the past winter, and on a showery day, the pigs were declared to be trembling, foaming, and fuming. All, without exception, manifested symptoms of disturbance, varying in severity, but the best were most dangerously ill. Three died in rapid succession, and advice was sought. The poor pigs had received an extra rich supply of food, containing a heavier proportion of good barley than they were accustomed to; their high condition would not admit of such an addition to their supply, and they were thus destroyed. Our readers will perhaps remember the instance before recorded of high fed cattle being killed by a too liberal supply of the best oil-cake. It is a parallel case to the one here mentionod among the pigs.

It is evident that moderation in feeding, and perhaps an occasional dose of medicine, are as essential for the health of the pig as for that of other domestic quadrupeds.

VEGETABLE POISONS INDIGENOUS TO SCOTLAND.

(*From the same.*)

Happily for us, the Flora of Great Britain contains only a very limited number of poisonous plants. Those few, however, are sufficiently powerful in their effects to lead to frequent and serious accidents, particularly amongst children. A case was reported a few days ago in the *Peebles Advertiser* of several children at Penicuik having got possession of some berries of Mezereon, when one of

them, a child of two years old, having swallowed a few of the berries, was suddenly seized with sickness and vomiting. The mother, knowing the poisonous nature of the berries, became greatly alarmed, and called in medical aid. By the use of counteractive medicine, the child gradually recovered; but several days elapsed before it was restored to its usual health. The carelessness of parents in permitting their children to tamper with such dangerous substances cannot be too severely censured. The Mezereon, *Daphne Mezereum*, is a beautiful fragrant early spring-flowering cottage-garden plant. The flowers are succeeded by berries, at first green, afterwards turning red as they ripen, and are not very unlike the fruit of the red currant, and consequently tempting to children. Many fatal accidents would be avoided were the berries destroyed upon their first appearance —a recommendation all who grow this pretty plant would do well to follow. In the Pharmacopœias, the whole plant is stated to be corrosive. Six of the berries are sufficient to poison a wolf; and 12 grains of them administered to a grown-up person, as a remedy for quartan ague, produced vomiting of blood, followed by immediate death.

The berries of *Daphne Lauriola*, the only other species of Daphne indigenous to Britain, are also poisonous.

Both are useful in medicine when professionally administered, but exceedingly dangerous in unskilled hands. *Daphne Mezereum* is not, however, a Scotch plant, and is found only sparingly near Andover, Hants.

The seeds and dried leaves of *Datura Stramonium* (thorn apple), if taken internally to an extent beyond a drachm and a-half, have proved fatal. The whole plant is highly narcotic, as many of those in the same natural order are. The water in which potatoes have been boiled is used by gardeners for the destruction of aphides. Query—Are farmers justified in giving it to their cattle?

Atropa Belladonna—deadly night-shade. The whole plant is poisonous, and children allured by the beautiful appearance of the berries have often experienced fatal effects. It is seldom found far from houses, and hence the more dangerous. The safest means to adopt before the arrival of medical assistance is a draught of warm vinegar, followed by repeated tea-spoonfuls of spirits of hartshorn, taken in a glass of brandy and water. These narcotics frequently diminish the irritability of the stomach, so far as to render it insensible to the operation of emetics.

Some curious anecdotes are recorded of the narcotic effects of the fruit of this plant. Ray relates an account of its narcotic effects on a mendicant friar, upon his drinking a glass of wine in which this plant was infused. In a short time he became delirious, soon after was seized with a grinning laughter, and at last a real madness succeeded, from which he was cured by a draught of vinegar. Most of our early Scotch historians have narrated the destruction of the Danish army under Sweno, by mixing a quantity of the juice of the berries of this plant with the drink which the Scotch had by their truce agreed to supply them. This had the intended effect, and while the Danes were under its effects, Macbeth and Banquo broke into their camp and put most of them to the sword.

The Atropa mandragora, a previous name to Belladonna, was, in Cleopatra's days, as famous as opium is now for procuring sleep. She says:—

> "Give me to drink mandragora,
> That I might sleep out this great gap of time
> My Antony's away."

Again, *Iago* says of *Othello*, in the agonies of jealousy:—

> "Not poppy, nor mandragora,
> Nor any potent syrup in the world,
> Shall ever medicine thee to that sweet sleep
> Which thou own'dst yesterday."

The name Atropa is mythological—from Atropos, one of the Fates, whose especial duty was to cut the thread of human life. The fruit of this genus is well adapted to fulfilling her office.

Conium maculatum—Hemlock.—The whole plant is highly poisonous. Many fatal cases have occurred to people mistaking it for parsley. To the plain-leaved

variety of the latter it has a pretty close resemblance, and, unfortunately, is often found growing along with it, particularly in old weedy gardens. Therefore, to guard against accidents, the curled variety of parsley only should be grown.

Colchicum autumnale—Meadow Saffron—is a plant the concurrent testimony of ages has condemned as poisonous, although, like many other poisons, a valuable medicine in proper hands. Two drachms of the root killed a large dog in thirteen hours.

Cicutavirosa—Water Cow-bane, Water Hemlock.– One of the most virulent of vegetable poisons, both to men and some other animals. It is like most subaquatics, an early spring plant, and cows confined during winter when let out to pasture where it exists, eat it, and are killed by it; but as summer advances, and its scent becomes stronger, they carefully avoid it. Although poisonous to cows, yet goats, horses, and sheep eat it with impunity. The roots resemble parsnips, and children have been poisoned by eating them in mistake.

The poisonous draught under the name of hemlock, used by the Athenians to poison their state criminals, is supposed to have been the expressed juice of this plant. Plato, in his dialogue on the immortality of the soul, says: "The executioners of Socrates advised him not to talk for fear of causing the *Cicuta* to operate too slowly." M. Petit, in his observations, remarks that this advice was not given out of humanity to Socrates, but to save the *Cicuta*, for he (the executioner) was only allowed so much *Cicuta* per annum, which, if he exceeded, he had to furnish the rest out of his own pocket. This is also confirmed by a passage in Plutarch:—"The executioner that administered the deadly draught to Phocion not having enough, Phocion gave him money to buy more, observing that it was odd enough that at Athens a man must pay for everything, even his own death."

Digitalis purpurea—Foxglove.—A valuable medicine, but dangerous in the hands of inexperienced persons who dabble in native drugs.

Euonymus Europeus—Spindle tree.—The berries are, if not poisonous, very suspicious in their effects. The name derived from the Greek *eu*, good, and *onoma*, a name, literally meaning of good repute; but others say it was given by way of antiphrasis, because it is hurtful to animals. The berries we know to be fatal to sheep, and horses refuse them. Cows and goats will browse on the leaves, but refuse the berries.

Helleborus fœtidus and H. viridis.—The seeds of both had better be avoided; some fatal cases have been recorded against them.

Hyoscyamus nigra—Hen-bane.—A very poisonous plant in all parts. Children who have eaten the seeds have been poisoned. A plant, however, in the hands of the faculty, of great medical value.

Lolium tremulum—Darnel.—Said to be the only poisonous grass amongst the 4000 described species. It possesses intoxicating properties, and, if malted amongst barley, has considerable effect on the ale. The seed, when mixed with other grain and made into bread, has produced bad effects.

Mercurialis perennis—Mercury, or Dog's Mercury.—A very poisonous plant. There are many instances of people having eaten it in spring amongst other herbs having been poisoned.

Œnantha crocata—Water drop-work. –The roots are the most virulent poison that Britain possesses. It has, by some, been thought to be the cicuta of the ancients already referred to, but this Wepfer, in a learned dissertation, denies. In the *Phil. Trans.* and *Gent. Mag.*, several instances are recorded of its fatal effects. *Œ. fistulosa*, the only other native of Scotland, partakes of the same natural qualities. Indeed, most of the aquatic *Umbelliferæ* are poisonous.

Celery in its native state is highly deleterious, yet, strange to say, cultivation has removed its poisonous properties.

Paris quadrifolia—Herb Paris.—The berries are somewhat narcotic, partaking slightly of the properties of opium.

Solanum dulcamara and *S. nigrum* produce abundance of red and black berries. The plants were formerly employed in medicine, but both them and their fruit produce uncertain effects on the nervous system.

Recueil de Médecine Vétérinaire. July to December, 1860.

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XIV.—Fracture of the Olecranon in a Horse. By M. Pernaud, Assistant Veterinarian in the First Regiment of Carabineers.

This is an account of a fracture of the above-named process at its union with the radius, occurring in a six-year-old gelding. On M. Pernaud's arrival there was enormous distension, with heat and tenderness of the affected limb, which rendered the diagnosis somewhat difficult. The pulse was of a febrile character. The treatment consisted in bleeding to the extent of eight to ten pounds, and the frequent application of lead lotions over the affected member; injections, drinks containing nitre, and absolute rest; the patient's head being tied up to prevent his lying down. Diet consisted of hay and straw. In ten days the swelling was considerably lessened, and on the twentieth day had completely subsided, leaving a small hard provisional callus of about the size of a hazel nut. Ten days later the patient was allowed the freedom of his stable, and on the fortieth day was turned out into a paddock, there being still a certain amount of lameness.

XV.—Use of Egyptiac in Articular Wounds. By M. George, jun., Veterinarian at Sainte Menehould.

This is a report of six cases of open joint, some of them of some standing, and attended by severe inflammation and extensive swelling, cured by the use of egyptiac. In four of these cases the coffin joint was opened; in one the knee and in one the elbow. In several instances poultices and baths had been employed for several days without effecting a noticeable improvement. After commencing the egyptiac treatment, improvement was, in every instance, speedily manifested, and in spaces varying from one to two months a complete cure was effected. M. George does not consider it necessary that the agent be introduced into the joint, provided it comes into contact with the lips of the wound in the synovial membrane.

A case of failure is recorded, in which the joint of the patella having been opened by a kick, blistering was first had resort to, followed twenty days later by the application of the hot iron round the lips of the wound, and after ten days more by the application of egyptiac. The joint became enormously inflamed, the limb three times its normal bulk, and death resulted eight days after the first use of the agent.

XVI.—Extraction of a Vesical Calculus from the Urethra. By M. Dillon late First Veterinarian in the 13th Regiment of Artillery.

This is a case in which a urinary calculus, being expelled from the bladder, was arrested in the prostatic portion of the urethra, blocking up that passage, and giving rise to the straddling and difficult motions of the hind limbs, the colicky pains, and the frequent attempts to stale, characteristic of such cases. There was also considerable irritative fever. After securing the animal sufficiently, an incision was made through the skin, parallel with the median line, then with one hand on the rectum to steady the tumour, the incision was carried deeper and still in a vertical direction, until the tumour was exposed. The opening into the urethra having been sufficiently enlarged, the calculus was extracted by the combined efforts of the hand in the rectum and the forefinger of the other. A large quantity of reddish-coloured urine immediately escaped. The wound was secured by sutures, and in the course of sixteen days had completely closed.

The calculus was of an oval form, nearly smooth, and weighed 21 drachms. Chemical analysis showed its composition to consist of carbonate of lime, ammonio-magnesian phosphates, silica, a small quantity of uric acid, and an animal matter supposed to be a clot of blood, which had acted as a nucleus to the mass.

XVII.—Subacute Inflammation of the Sheath in the Ox. By M. Donnarieix, Veterinarian at Sainte-Fargeau.

This paper refers to a chronic inflammation occasionally seen in the sheath of the penis in working oxen, excited by the leather girths applied on the animal during shoeing. The most posterior of these surrounding the abdomen on a level with the thighs sometimes causes abrasion or other injury to the mucous membrane of the sheath, a state of matters speedily aggravated by the frequent contact of urine, which, as is well known, is discharged from the penis into the sheath, and not out of it as in the horse. The inflammation thus induced becomes, in some cases, very extensive, extending forward on the inferior of the chest, and backward between the thighs, where it proves a great hindrance to the motions of the hind legs. In the course of the malady false membranes commonly form on the inflamed mucous membrane.

The treatment, as indicated in two cases M. Donnarieix puts on record, consists in frictions with wine lees, emollient injections; when much swelling exists, scarifications, and in case gangrene is threatened, the use of the hot iron. Fever is counteracted by saline draughts, and in some cases by bleeding.

XVIII.—Three Cases of Twisting of the Uterus. By M. Heu, Veterinarian at Chaumont-en-Vexin.

This is a report of three cases of twisting of the uterus in the cow, due, in the opinion of M. Heu, to the cows leaping ditches when near the time of parturition. It seems that in all cases the cows, in going to pasture, had to pass along a road with a ditch at each side, surmounted by a ridge, and that they were in the habit of leaping over the former in order to gain the latter. By the usual process of turning the subjects in the same direction in which the twisting had taken place, the organ was in all three cases restored to its normal position, though, in one, the cow was so far exhausted that she did not survive the operation.

XIX.—Treatment of Œsophagean Wounds. By M. Moisant, Veterinary Surgeon at Châteaudun.

M. Moisant having opened into the œsophagus in lancing an abscess, and failing, by means of sutures and other means, in obtaining a cure, had resort to the following contrivance. He procured two small, round iron rods, about six inches long, and pierced by a round hole at each extremity. Through these holes he passed cords, and by placing the lips of the wound between the rods, and bringing them together by tightening the cords, the escape of alimentary matters was effectually prevented. This apparatus was only applied when the patient was being fed, as the alimentary matters were looked upon as being doubly injurious to the granulating surface, on account of their mechanical and chemical properties. At other times the wound was left free, allowing the partial escape of salivary matters swallowed, and obviating any risk of gangrene to which the lips would be liable in the case of the instrument being kept constantly applied.

XX.—Inoculation in the Contagious Typhoid of Cattle. By M. Pierre Seifman, Professor in the Veterinary School at Warsaw.

M. Seifman, in the present communication, favours us with an extract from a memoir by M. Sergmiff, veterinarian to the medical department of the Minister of the Interior, and published in the *Journal de Saint Petersbourg*. This extract gives the results of a number of experiments made under government direction in various parts of Russia, to ascertain the effects of inoculation upon the progress of the cattle plague.

The conclusions, so far as we are presented with them, are as follows:—1*st*, Animals are only subject to the malady once in their life; 2*nd*, The natural virus, in passing from one animal organism to another, has its virulent properties decreased, and thus weakened, it does not destroy the animal, but is an effectual preservative against future attacks. 3*rd*, Virus preserved for periods of from six to eighteen months has been found to preserve its essential qualities, and to produce the disease by inoculation.

So satisfied is the Russian government with the result of these experiments, that it has authorised the founding of establishments for the inoculation of cattle, and should the experiments be substantiated by a more extended use of this measure, the contagious typhus may for the future be confined to an extremely limited area.

XXI.—Typhoid Fever in the Stallions of the Depôts of Besançon and Tarbes. By M. Trelut, Veterinarian to the Depôt at Tarbes.

The present is a report addressed to the Minister of Agriculture and Commerce on a typhoid fever which raged during last year in the studs above mentioned. The symptoms generally showed themselves suddenly, only two instances having been observed in which a dulness and inaptitude for exertion were noticed before the onset of the malady.

The malady is ushered in by general fever, hot, dry mouth, containing some viscid saliva, tongue yellowish brown, pulse sometimes intermittent, and small, from 40 to 45 per minute, excited respiration, languor, and carelessness about food.

On the second day all these symptoms are greatly aggravated, and the animal is very restless, with pendant head, fixed eye, and stupid expression of countenance. There is great prostration, a hot, dry skin, with complete insensibility to irritants, such as pricking with a knife. Breath is fetid, constipation exists, and any fæces passed are hard, dry, and coated; pulse 60 to 70, and small.

On the third day the limbs are cold, respiration accelerated, sore throat, dry cough, and a yellow spumous liquid escapes from the nares. The pulse is 80 to 85, and the patient stands constantly. No defecation. On the fourth day, the condition may vary, according to the manner of treatment. 1st, If this has been of a tonic nature, death commonly results, preceded by great prostration, considerable respiratory excitement, gurgling rale in the chest, imperceptible pulse, venous pulsation, brown tongue, and generally an escape of black spumous blood from the nares; 2nd, By a gentle antiphlogistic treatment the symptoms are modified. The malady may seem partly arrested, but in the course of a day or two the symptoms are again aggravated, the conjunctiva takes on a leaden hue, the discharges caused by revulsives take on a bad character, diminish and disappear, the expression of the countenance is that of extreme stupidity, the animal supports himself with the greatest difficulty, has a dry crepitant rale in breathing, and ultimately falls and dies. A yellowish liquid like discoloured blood, generally escapes from the nares; 3rd, Submitted to a more energetic treatment, improvement is commonly manifest on this day, the pulse is more perceptible, the motions of the flanks more regular, the cough is less frequent and of a better character, the limbs become warm, the conjunctiva less deeply tinged, and the tongue is not so discoloured. The patient does not defecate nor lie down.

In the case of continued improvement, the symptoms are gradually ameliorated, and on the eighth day some fæces may be passed, hard, dry, and coated with a black plastic matter, evidently the product of a sanguineous exudation. Sometimes bloody diarrhœa supervenes. From the ninth to the twentieth day improvement is gradual; an amount of constipation continues, however, and various secondary symptoms are liable to show themselves. Thus spasms of one or other of the members, or of all four alternately, occurred in some; in one case the penis, and in others the inferior wall of the belly and chest, became enormously

swollen. Some had excessive and glutinous perspirations; some became vertiginous, others showed symptoms of cerebral excitement, while in one case an abundant hæmoptysis took place.

In some cases, about the ninth day, when the symptoms would indicate improvement, the urinary organs become affected, there are frequent movements of the hind limbs, haggard countenance, dilated pupils, exalted heat of the skin, precipitate, irregular respiration, strong, hard, and accelerated pulse, and strangury, small quantities of glary urine being frequently passed after severe straining. The sphinctor ani becomes relaxed, and the suppurations from setons, &c., take on a grayish, clotty, or bloody appearance. The thirst is excessive, and, if the animal survives, extreme emaciation ensues.

Two post-mortem examinations were made, and in both the lesions were of the same nature, though differing in intensity. After death there escaped by the nose a yellow spumous fluid, like blood deprived of its colouring matter; the blood exuding from the small vessels in the subcutaneous areolar tissue was dark and tarry; the larynx, trachea, and bronchii contained liquid similar to that escaping by the nose, and their mucous membranes showed dark-brown ecchymoses. The greater part of the lungs was engorged with dark-coloured blood. The pleuræ and pericardium were healthy. The substance of the heart discoloured, and easily torn. The great arteries in left ventricle contained dark tarry blood of a syrupy consistence; the venous side of the heart, with the veins abutting into it, contained a firm clot; and the endocardium was covered by numerous yellowish petechiæ. The mouth was dry, the tongue earthy yellow, the abdominal cavity contained no liquid; the stomach contained a quantity of liquid, and its right pouch was covered by a glairy serous fluid; the mucous membrane under this slightly infiltrated, and easily raised, showing slight engorgement of the muscular coat. The whole small intestine was found in the same condition, but showed, in addition, numerous small holes, as if the commencement of ulceration. The glands of Peyer and Brunner were enlarged. The cœco-gastric part of the colon was covered by a liquid similar to that covering the small intestine, but this had disappeared in the lower part of the colon. The liver, remarkable for its size, was gorged with tarry blood. The spleen was infiltrated by a similar fluid. The inguinal and mesenteric glands contained a gelatinous serum; the mucous membrane of the bladder had a reddish plastic covering, increasing in thickness toward the fundus, where a small patch was detached, leaving a denuded-looking surface; the kidneys were friable, and altered in colour. In one case the choroid plexus was slightly congested, and in the other some extravasation of blood had taken place into the parenchyma of the testicle.

The blood, when drawn, appeared like badly pounded red chalk diffused through water; the froth upon its surface reflected a slight azure tint, and on its quickly coagulating and falling, communicated this hue to the surface of the clot. Both on the surface and in the mass of the blood were numerous yellow lines permeating its structure. If it coagulated in the course of a few minutes, a small buffy coat was produced, but if bleeding was repeated, this was less in quantity, and it generally disappeared in the third.

The *treatment* consisted in bleeding, according to the size, condition, &c. of the patient, generally about 8 to 12 lbs. the first day, and 2 lbs. less on the second, 4 on the third. In some cases this was repeated even on the fourth and fifth days in gradually decreasing amount. Whenever cough or thoracic symptoms appeared, a sinapism was applied along the inferior of the chest and abdomen; if this failed to take effect in eight hours, it was activated by the addition of five drachms of tartar emetic in powder. Setons medicated with turpentine were afterward introduced on each side of the chest to induce suppuration; the pus from these had always a gelatinous aspect. If the legs remain cold for several hours, they are enveloped in mustard poultices, a process sometimes repeated three times in the course of the day. The diet is very restricted until the fifteenth day, consisting in water blanched with meal, and injections of water with salts in solution. When the urinary organs are affected, boiled bran is applied over the kidneys, emollient injections administered, dry camphorated fumigations to

the abdomen, and a sufficiency of mucilaginous draughts. Medicine given internally is rendered useless, by the coated condition of the mucous membranes, and can only prove injurious.

The *causes* of the malady are set down in a general way; as 1st, arrested transpiration; 2nd, a modification, though not actual disorder of the digestive and respiratory functions; 3rd, badly elaborated food impairing the condition of the blood; and 4th, the deranging of the whole economy.

XXII.—Sulphate of Iron as a Prophylactic against the Epizootic Pleuro-pneumonia of Cattle. By MM. Demesmay and A. Charles.

This is a report presented by these gentlemen to the Committee of Agriculture at Lisle. After mentioning the uncertainties and dangers attendant on inoculation, and other measures, this paper records several instances in which sulphate of iron entirely suspended the occurrence of the malady; and as it broke out again in some cases on the agent being withheld, its renewed use once more arrested the outbreak. The first case mentioned is that of M. Turck, who, having lost many cattle, commenced giving the remainder this agent in ounce doses, which at once arrested its progress in his herd. Leaving off the agent it again occurred, and once more disappeared on its being had resort to. The second instance was in the cattle of M. Drouant, near Nancy, who gave the agent in from one to two drachm doses, alternated with gentian, which thus completely arrested the malady. M. Jacob, veterinarian at Nancy, has used it extensively in his practice in from two to three drachm doses with the best results. M. Demesmay administered it to a large herd in somewhat larger doses, and was equally successful. In one case in which the agent appeared useless, the failure is attributed to the animals having been sent each day to the pasture, and excessive secretion consequently induced.

The method in which the agent acts is supposed to be in rousing the failing energies of the digestive organs, and supplying, not only iron, but more and better elaborated chyle to the blood.

XXIII.—Cases of Bloody Sweat in Animals (Hœmatydrosis). By J. B. Ercolani.

All that is known of bloody sweats is not sufficient to guide us to an exact conclusion as regards the nature of the phenomenon, but it should probably be considered more as a symptom common to several diseases than as the expression of a single morbid condition. Fuchs, in his recent work on *Anatomie Pathologique*, holds that it is only serum tinged with blood, though in Ercolani's opinion it is more probably true blood. Again, it is a question whether the blood escapes through the sudorific glands or by the rupture of the superficial cutaneous veins. Falke holds the former opinion; Hering holds the latter, and quotes Siebald in his *Natural History of the Horse*, to the effect that he had frequently observed in the white horses of Tartary such sweats from the spontaneous rupture of veins in various parts of the body. The passage referred to is this:—"I have sometimes observed a bloody sweat in oriental horses; but I have been able to examine the skin in only one instance. During life the veins of the chest, the shoulders and fore limbs, were full and prominent. After death the skin was normal in these regions; but the subcutaneous areolar tissue was so adherent that it was with difficulty raised from the structures beneath it. The venous network was very well marked; and under the skin were ecchymoses of the size of a lentil, while some little cavities in the subcutaneous areolar tissue were filled with blood."

The few pathological facts of this kind on record seem to show that the affection is rarely fatal.

The first instance noticed is by a Swiss veterinarian (Hess), as occurring in a six months' old heifer. The blood dropped continually from the lower region of the body, from the throat to the anus, commencing at the region last named, and extending towards the former. It continued four hours, the greatest escape being

from the umbilicus, and it was calculated that about five lbs. were lost during that time. Antiphlogistic treatment cured the animal.

In the *Magazin* of Gurlt and Hertwig (1835), Faas cites the instances of a like phenomenon taking place in two three-year-old oxen in 1828. These animals having been subjected to great heat, there escaped from the whole surface of the body, except the tail and the extremities, a slight, bloody sweat, removed the instant it was exuded by the frictions to which the animals were incited by the incessant itching. It was at once arrested by bleeding, salines, and local cold applications.

In 1844, Dr Gaspard addressed to the Agricultural Society of Paris, a communication on a bloody sweat, occurring in different parts of a cow in the fifth month of gestation.

Schulz related a fatal case in 1852. A calf had slight inflammatory fever; was restless, and from its skin blood escaped on the slightest pressure. The diet was accused as the cause. The phenomenon continued notwithstanding the administration of nitrate and sulphate of potass internally, and the use of vinegar baths externally. It died on the sixteenth day in a state of anemia. After death the small cutaneous vessels were gorged with blood.

Another case was seen by Brabænder in a feeding cow. The escape took place from various regions of the body, and the hand was tinged with blood when drawn over these parts. The cow lay in an exhausted condition, with a soft, weak pulse of 70 per minute, the breathing was hurried, and the mucous membranes pale and yellow. Vinegar baths externally, and infusion of arnica internally, did not prevent the animal dying the same night.

In a case recorded by Brunswig, blood escaped from the whole skin of a horse in such abundance that the animal died on the second day.

A case is recorded by M. Rossignol, of Paris, as occurring in a four-year-old mare, in which the bleeding took place from the anterior part of the near pastern, and the phenomenon recurred repeatedly with intervals of several months, the recurrence taking place whenever the animal was put to work. A similar case is published by Numan in Hering's *Magazin*, in which the escape took place from the hind limbs. In another, published by Meyer in Gurlt's *Magazin*, the exudation took place from the white hind limbs of a filly. This filly took typhoid fever next day, during the course of which the hæmorrhagic skin became gangrenous.

Lastly, a case was noticed by Apitz, in which a troop horse, after going five miles at night, had a viscid bloody sweat all under the saddle, and on the course of the vertebral column for a short distance before and behind it. The parts did not seem to have their sensibility increased. During the night a slight crust covered the part, but next day, seeming to be quite better, the horse continued his march with the regiment.

Falke attributed the phenomenon to the fineness of the skin in young animals, and to a hæmorrhagic condition, but it occasionally results from great heats, fatigue, or painful pressures. The true causes, however, are by no means evident, and further examination must be made of the exuded matter, and of the conditions in which it takes place, before either one theory or another can be substantiated.

XXIV.—Notes of some Cases of Difficult Parturition. By M. Donnarieix, Veterinarian at Sainte-Fargeau.

This is a response to some criticisms of MM. Aubry and Rochard on a previous paper of Donnarieix. It is chiefly intended to substantiate the assertion of the latter, that any operation necessary in unnatural presentation in the cow is mere child's play compared with the exertions necessary to give similar assistance in the mare. Twelve instances of various mal-presentations in the mare and cow are recorded, and the subject entered into at some length, but as the above fact is the chief matter elucidated, we will not follow the author in the consideration of his cases.

EDINBURGH VETERINARY REVIEW

AND

Annals of Comparative Pathology.

ORIGINAL COMMUNICATIONS AND CASES.

Lectures on the Principles and Practice of Shoeing, delivered in the New Veterinary College, Edinburgh. By Joseph Gamgee, Sen.

LECTURE V.

In the foregoing Lectures we have examined the structure and functions of the several component parts of the foot; our aim being to arrive at such understanding of the whole, as will lead to practically useful knowledge with reference to the development, preservation, and restoration, when diseased, of the structures referred to. While endeavouring to treat the subject methodically, and to proceed step by step in its consideration, I have not presumed to treat any one division of it fully in a single lecture; neither have I pretended to exhaust the successive sections, fully impressed with the conviction that it is profitable to a clear understanding of any complicated subject, to study its details, and their relation to the whole, alternately and repeatedly; thus from facts to actions, from parts to the whole, from separate phenomena to a contemplation of general laws, and *vice versa;* in other words, the lessons or chapters of nature's work, to be thoroughly appreciated and learned, require to be read forwards and backwards, and in every conceivable aspect and direction.

I could never have learned the foot to any useful purpose, if my attention had been exclusively directed to it, and I have always found it difficult to teach others on so limited a field of observation. I cannot conceive it possible to acquire a just knowledge of the structure and functions of the foot, without studying it in connection with the anatomy and physiology of the limb of which it is a part. An acquaintance with the anatomy of the foot would be of very limited use, and might by virtue of its partiality conduce to positive error, unless the functions of its parts were taken into account separately and collectively; and these, I hold, never can be learned as they require to be known by the veterinary surgeon, unless taken in connection with the movements of the limbs, and these again considered in their relation with the trunk.

It has on a former occasion been my agreeable duty to rescue from comparative, and wholly unmerited, obscurity, the beautiful quarto of Mr Strickland Freeman, "On the Structure of the Foot, and on the Art of Shoeing." His work is remarkable for the very little error it contains, and for the total absence of that false speculation which abounds in the productions of the majority of his successors. I have shewn you that one of Mr Freeman's merits was his exposition of the elasticity of the horse's hoof, and you will learn by the following quotation from his work how widely he viewed the subject, and how accurately he appreciated the necessity, on which I have dwelt so forcibly, of studying simultaneously the construction of the hoof and the action of the muscles :—

"I shall begin these observations," writes Mr Freeman, p. 1, "by giving some general idea of the construction of the hoof, and of the motion which its elasticity admits. This ought always, as much as possible, to be preserved, in order to co-operate with the motion of the muscles, from which the spring in all animals is derived."

There is necessarily a great deal of local structure and function to be learned, as I have, to some extent, shewn in my previous Lectures; but when we direct our attention to local anatomy and local action, considerable general knowledge is pre-supposed. It would be impossible for any one, ignorant of the great centres of innervation and circulation, and of the respective systems, to understand the plan and action of the vessels and nerves of any organ or part of the body. In the case of the muscular system, the impossibility is still greater of understanding its distribution and mechanism by the mere study of parts. A man might dissect the vessels of the cerebral region his whole life-time, without learning their anatomy and physiology, unless he also dissected the head, trunk, and limbs, and took an enlarged view of relations and actions. For analogous reasons, it is quite impossible to study the mechanism and functions of the foot apart from the limb. What can be more erroneous than to study the insertions of the long flexors and extensors attached to the pedal bone, and to pretend to understand their action apart from the great muscles, of which they are the continuations and insertions!

The pains I have taken to impart a clear and definite idea of the anatomy of the different parts of the foot, will prove to you the value I attach to such local knowledge on its own merits. The physiological observations which I have associated with the anatomical description, are little more than preliminary to the study of the subject. They will, I trust, aid, on the principle that it is always easier to understand the construction of a piece of machinery when we know something of its uses; and I entertain no doubt that when we shall revert to the more particular study of the foot, you will appreciate our plan even better, because more fully, than you are now able to do. We have diverged from the subject of my last Lecture, in which we were noticing the arrangements for what Strickland

Freeman tersely designated the spring of the foot—that beautiful provision, whereby the weight of the body, in its transmission to the ground, is expended and diffused. I shall now endeavour, as briefly and as clearly as I can, to trace from above downwards the structural and functional relations with which the spring of the foot is in inseparable harmony, and of which it may be said to be the fulfilment.

I shall, in the first place, direct your attention to the horizontal position in which the trunk is placed relatively to the limbs—suspended between the fore ones by a powerful, yet yielding, muscular attachment, whilst the connection with hind limbs, as with the lower ones in man, is by ball-and-socket articulation, with an enormously strong, inelastic, and short intervening ligament. The spine between the hind and fore limbs presents some peculiarities worthy of notice in the physiology of locomotion. It is slightly arched, more especially in its posterior half; and here, also, the vertebræ are broader and thicker, and less moveably articulated than anteriorly. The broad spinous and transverse processes of the large lumbar vertebræ, locked in as these are by the peculiar arrangement of their oblique processes, are well adapted, by their spread, to afford attachment to large muscles; while the small bodies, and long spinous processes of the dorsal vertebræ, are peculiarly well-fitted for leverage and motion. This is the physiological explanation of broad and well-arched loins and high withers. At the same time, the vertebræ, with corresponding ribs, form the trunk, in which are enclosed the vital organs of the chest and abdomen, equally exempt from concussion in all the velocity of movement of which the horse is capable.

The connection of the head to the trunk deserves a few remarks, to illustrate how here, likewise, the two great ends—leverage and elasticity—are combined. The cervical vertebræ are long, and their line of connection is so curved, that it may, for practical purposes, be described as composed of the segments of two circles—the lower or posterior one, with its convexity downwards and forwards; the upper and anterior one, with its convexity in the opposite direction. From the head to the dorsal vertebræ, a powerful yellow elastic ligament is stretched, its fibres spread out in the lower arch just described, and are collected together, and firmly implanted into the convexity of the upper arch, and to the occipital bone—an arrangement favourable to strength, leverage, and elasticity, in the highest degree. Thus is the brain spared concussion, while the head and neck become a leverage, in which their powerful muscles are subsidiary to general locomotion.

Reverting again to the connection of the limbs with the trunk, we observe, in the fore ones, that the scapula is the first, and a very important, bone to be studied. Lying obliquely back on the ribs, nearly at a right angle with the humerus, it affords wide attachment to enormous muscles, which, through its medium, connect the fore limb with the trunk. The prominently projecting angle or point of the shoulder completes as efficient an apparatus for leverage as can possibly be conceived, while the elastic, though firm, connection with the trunk

is marvellously aided by the broad plate of cartilage which surmounts the upper margin of each scapula.

The remark has been made, and is very generally accepted, that the fore limbs are the pillars of support, and the hind limbs the propellers of the body. No comparison, I venture to say, could be less adapted to convey a right view of the subject. Nothing observable in the fore limbs of the horse reconciles me to the inappropriate meaning of the words applied to them,—pillars of support; there is indeed more fixity in the hind limbs, and particularly so in their connection with the trunk; but to characterise either exclusively as pillars of support, is to disguise rather than to explain their beautiful structure and function. The fact is, that instead of the fore limbs being *the* props of support, and the hind *the* propellers, they exert together a perfectly equal share in the act of progression. The hind limbs possess the greater advantage of fixity, and the fore more extent of elasticity,—a provision which enables the horse, though heavily-laden, to traverse tracts of country at great speed, with impunity. How different the structure and uses of the corresponding fore limbs in the horse and the upper in man! In man, the upper limb is connected with the trunk by the clavicle, an axis on which it rotates; in the horse, no such movement as rotation takes place at the shoulder. If a man fall on his hand, the shock in its transit upwards frequently fractures the clavicle, whereas in the horse the most ample provision is made to ward off concussion by the muscular and eminently elastic connection between the limb and trunk.

Comparing again the anterior and posterior limbs of the horse, not noticing them merely as organs of support, but of locomotion, we see as much provision for leverage in the fore as in the hind, alike in structure, form, and relative position of the bones, and in the size, length, and distribution of the muscles.

You will be able to test how far these observations are based on fact, by noticing the movements of any horse; but I would suggest that you make the powerful Clydesdale cart-horse your subject for testing the practical study of locomotion. You will find the deliberate action of his powerful muscles very favourable for careful observation.

The prevalent error has not only been to overrate the action of the hind limbs, as organs of progression, but to underestimate their function in giving spring to the body. The angles of the stifle and hock-joints are greatly subservient to the double purpose of freedom of movement and elasticity essential to the warding off concussion; a difference between the fore and hind limbs consists in the last bone of the foot, it having greater capacity and bearing surface in the fore, and being more pointed and upright in the hind foot. Similarity of action results from true symmetry of form, and both are favourable to the preservation of feet and legs in the exertion to which the horse is submitted. The aim in the art of shoeing should be to conserve, and not to impair, the harmony of form and action, to do which, it is my endeavour to establish rules for guidance.

As the limbs of horses differ in size and power, in obliquity and elasticity, you will find that the difference does not merely affect one part of the member, but the whole of it; and also, that unless you take such difference into account, you cannot preserve and restore the functions of particular feet. Fundamental principles, to be hereafter developed, will guide you in such cases, but principles admit of latitude in their application, and are not fixed, narrow rules to be blindly followed. A great deal of mischief has arisen from the hoof being regarded as a block to be carved and polished to a given shape, whereas it is but the outer covering of the living foot, itself a part of the limb, variously conformed, and requiring various treatment, according to the anatomical and physiological peculiarities of form and action in each particular case.

If anything interfere with the action of the foot, the elasticity of the whole limb is impaired; the degree of impairment being greater than that represented by the functional disturbance in the foot itself. It is a great mistake to suppose that the only perceptible injury which accrues from bad shoeing is immediate *lameness*. There is an impairment of freedom, of ease, of springiness, which, to the rider as well as to the experienced looker on, is most perceptible.

At the French Veterinary Schools, they have always taken account of the position of the limbs of the horse in their teaching of the art of shoeing; and they have derived the full advantage of their broader, more philosophical, and more just mode of studying the subject. I have imitated no school exclusively, but have endeavoured to learn from all to which I have had access, the better to understand nature and to instruct myself.

On the Position assumed by the Horse's Foot in Progression.

By James C. L. Carson, M.D., Coleraine, Ireland.

(To the Editor of the Edinburgh Veterinary Review.)

Sir,—When Mr Dyer states, in your last number, that Dr Carson had failed, in his communication to your journal for August, 1861, "to prove that the heel of a foot reaches the ground first," it is quite evident he has entirely mistaken the purport of my letter. It was no part of my intention to *prove* this fact. My only object was to shew that the new opinion, whether right or wrong, was published by me ten years before Mr Lupton's paper on the subject appeared. Nor will I at present undertake to bring up all the evidence which can be adduced to prove the point. Whilst I hold my own opinion, I must leave the discussion of the question to those who are more conversant than I am with veterinary science. I have never had the advantages of a good, nor yet the great disadvantages of an erroneous, veterinary education. Hence I have been obliged, to a large extent, to pick up information by the use of my own eyes. And certainly it would

require something more than mere theoretical reasoning to convince me that my eyes have led me astray on this point. In consequence of a strong natural taste, I have been, since childhood, a close *observer* of horses; and, as I was not learned in the doctrine of the schools, I do not recollect of having ever held any other opinion than this, that the horse lays his heel first to the ground, and walks from heel to toe. It seems to me somewhat remarkable that any judge in the world could entertain a different opinion. To suppose that the horse should both light *on* the toe and lift *from* the toe—that the toe should be the first and last point of contact with the ground—appears an approach to absurdity. The toe would require to be made of something more durable than steel to stand the tear and wear which would result from such an arrangement. Besides, this construction would involve a tedious and clumsy action, which is altogether inconsistent with the beautiful simplicity of natural organisation. Just imagine the time spent in laying down from toe to heel, and then lifting from heel to toe. Any person who wishes to form an idea of this may do so by trying the action with his own *hand* on a table. If he wants to go forward, he will find it tedious, very clumsy, and difficult, when the points of the fingers are brought first into contact with the surface; but the very reverse is the case if the heel of the hand is first laid to the table.

Mr Dyer is not for either heel or toe; but thinks the foot is laid down quite flat. He certainly has made little advance in proving the accuracy of this opinion. He even admits he "has seen many horses place the heels on the ground first." I can hardly make certain whether he means this as a natural action or as the sole result of disease, as there is a little confusion in his words upon this point, as well as on the wearing of the toe of the shoe. I may observe, however, that I cannot understand how it is possible for the horse *ever* to lay down his heel first without a very decided halt or limp, *unless it is the natural and proper method.* It is easy to see that, although the heel ought to come first to the ground, it is possible for the toe, in some instances, to do so, in consequence of defective muscular action. But the reverse appears to me to be out of the question. If the toe, or flat, should come first, the heel never could do so without a great and observable defect in the action. It would then be about as awkward for the horse to come first with his heel, as it would be for the man to come first with his toe. The reversing of the natural action, in either case, would be attended with such decided defects, that it could not possibly fail to attract attention. Now, what do we find as the result of observation? If we see a man walking with a firm, elastic, active, and powerful step, we will invariably observe him laying the heel to the ground first; but the infant, whose muscular power is insignificant, uses its toes for a long time before it can lay down the heel; and the very old man, who has lost his action, shuffles along the ground, and lays either his toes or the flat of his foot to the surface of the road. The same may be observed in the man of middle

age when under severe sickness. It is only when he has recovered his muscular strength that he lays down his heel correctly. So it is with the horse. If we examine one which *evidently* brings his toe first to the ground, we will find that he is either overweighted in draught, or is so much the worse of wear, as to be nearly done, or that his muscular power is exceedingly defective. On the other hand, I have seen hundreds of examples in which the horse brought his heel *quite perceptibly* first to the ground, and yet had a most powerful, active, energetic, light, and corky action. A horse of this kind, notwithstanding Mr Dyer's opinion to the contrary, will stand an immense amount of wear. One of the greatest trotting horses I ever possessed, or indeed ever saw, was exactly of this description. There was no mistake about his laying the heel first to the ground ; a half-blind man could not miss observing it ; and yet, although he got an immense amount of work on the road, as all trotters will, as well as in the field, his feet and legs were as sound at thirty-one years of age as when he was foaled. He died without ever having a hair off his knees. A friend of mine in Coleraine has at present a pony, which I know to be twenty-seven years of age, and which, for more than twenty years, has carried its master—a medical practitioner, and a heavy weight—on the road, and its legs are still as fresh as paint, although it is as well-marked an example as could be of laying the heel first to the ground. I never passed it on the road without admiring the beautiful way in which it did lay the heel to the ground. Its action, in this respect, was most beautiful. Hence its great power of endurance.

I need not occupy your space any longer with this subject, as it has already been very ably handled by Mr Joseph Gamgee and Mr Lupton, in your journal for January, 1859. I hope Mr Gamgee will again turn his attention to the question, because, it appears to me, he brings a great deal of that rare commodity, good, plain, practical sense, to bear upon all he touches. His remarks are always pithy, and to the purpose.—Yours, &c.

JAMES C. L. CARSON, M.D.

COLERAINE, IRELAND, *Sept.* 11, 1861.

Eczema ; an Eruption on the Skin of the Horse. By JOSEPH GAMGEE, Sen., Clinical Teacher, and Lecturer on the Principles and Practice of Shoeing in the New Veterinary College, Edinburgh.

I AM induced to offer remarks through observing an essay, under the heading as above, in a weekly agricultural journal—*North. British Agriculturist,* Sept. 4—in which eczema is mentioned as a common disease among horses, and measures being prescribed, in a way which, in our opinion, only raises a question of amount of injury entailed by the public through such means.

Eczema—a word derived from the Greek, as the lexicographers tell

us—signifies to boil out. It has been long noticed as a peculiar, though not frequently occurring, skin disease in the human subject. It is said to be a sequel to, or found as a complication of other affections, amongst which debility from old age is spoken of. In veterinary practice, we find the carnivorous animals most subject to eczema; and amongst the domestic animals submitted to our care the dog is most commonly affected.

Eczema we consider one of the rare diseases among horses; and which, when it does occur, requires a well-skilled veterinary practitioner to diagnose and treat it.

Skin affections in horses, which are found to prevail in summer months, passing away as the winter approaches, and returning again with the warm season of the next year, are totally distinct affections in cause and character from eczema. In my early years of practice, I met with a larger number of cases of skin diseases in horses during the summer months than generally falls to the lot of veterinary practitioners. We may observe, as I shall endeavour to shew, that locality and climate influence the nature and prevalence of affections of the skin of animals, and such diseases of their internal organs as depend on insects and parasites.

Horses on the Yorkshire wolds and other districts in the north of the kingdom, are not teased by all the species of insects to which those in the New Forest in Hampshire are exposed; a still greater difference in this respect is found as we leave these shores for warmer climates; it is not the temperature, but insect life which warmth calls into activity, that makes such difference.

It is within our remembrance that almost all skin diseases of the horse were comprised under two names—viz., mange and grease; two or three local diseases caused by filth and mismanagement, such as mallenders and cracked heels, completed the list.

In most cases where I have been called to attend horses affected with skin disease over the surface of their bodies in summer, I find it due to an irritation caused by the sting of numerous small flies of the gnat species.

Local opportunities, after a few years' practice and groping in the dark, led me to see the cause of these skin affections; once that was understood, the proper courses to be taken were indicated.

After several years regarding those skin affections as the necessary effects produced by the change from winter to summer temperature, and after using depletive means, such as bleeding, physicking, giving doses of nitre, antimony, &c., and after besmearing the skin with ointments, applying decoctions and lotions, the cases still dragged on from May to September their seasonable course. We did not, however, admit that our treatment was a failure; for, as cool autumn approached, the horse's skin lost its scabby feel and appearance, and a new coat of hair sprang up, except in patches where, by rubbing, a breach in the true skin had been produced.

The results, following a laudable perseverance, were looked on as

the necessary good effects of our treatment. These skin affections prevail in localities not necessarily at a great distance from places where horses are free from the irritating cause. The first incidents which led me to connect cause and effect, was seeing that for two or three successive summers several noblemen's and gentlemen's villas in the vicinity of the city in which I resided furnished numerous patients, and that whenever horses were brought from the locality where they had become affected, to be treated at our infirmary stables in town, recovery commenced, and in the course of a fortnight, under simple treatment, a healthy skin was observable, and a new coat of hair growing. As in all such cases, when so much had been observed, the line for practice was plain. We visited and examined the stables and localities, and generally found these clean, well ventilated, often shaded by mulberry trees, vines, &c.—all, in fact, admirably congenial to animal life.

With the stables shaded by day, flies did not infest the horses much, but we soon discovered that it was in the night when the slender, almost invisible, little gnat teased them. The first parts affected are those where the skin and hair are thinnest, on the ears, face, inside the hind-legs, the neck and shoulders; and if the horse is unclothed, more or less over the whole surface of his body. Most people know the irritating sensation produced by a small gnat, that blood issues on pressure immediately after the sting, that an elevation of the skin takes place, and that a serous exudation follows at the spot where the venomous proboscis pierced. Irritation is kept up, but at length subsides, as does the swelling, and a small dry scab is formed. If we multiply these stings by hundreds, and consider that they are constantly taking place day after day, and night after night, we shall find an explanation for all the phenomena described under the name Eczema; we shall find a number of recent stings which, on pressure, yield blood; from others issue a limpid, colourless secretion; whilst from some we may rub off scales or scabs, and with these the hair is also detached. We may be met by the observation that these are far-fetched cases, and do not apply to such as are met with in Scotland and England; we can say, however, that after giving the subject every attention (observations and experience not being confined to a locality, but extending from the Forth to the Land's End, and from the English Channel to the Mediterranean), our opinion has become confirmed. Horses in the same stable or locality are not all equally affected, any more than are the skins of men under like circumstances.

Since we are convinced that large numbers of valuable horses are injured, and not a few poisoned, by unskilful administration of drugs, to destroy some imaginary or real parasites, we believe the subject to be one in which veterinarians and owners of horses are deeply interested.

I will cite one case in point which happened some years ago. I was summoned to attend a horse, the property of a nobleman; the patient was at a summer residence about forty miles from Florence. Apprised of the great urgency of the case, yet with the means available for

transit I did not reach the spot until twenty-four hours after the message had been despatched. When I reached the villa, the horse was already dead, and nothing was left to be done but to investigate the nature and cause of the malady, the treatment that had been pursued, and to make a report on the whole.

The subject, a fine carriage horse, about eight years old, had been always of good constitution and stamina ; he had, during that summer, whilst in the country, been affected with irritation of the skin, loss of hair, and the usually accompanying scabby appearance, The horse was in charge of an English coachman, a man of average intelligence, and I met a veterinary practitioner who had been attending him. It was soon apparent that the animal had not died from want of medicine, for much had been administered and externally applied ; the skin affection proving obstinate, as it was said it had been determined to submit the horse to a mercurial course. I proceeded to examine the viscera, saw nothing to arrest my attention till I opened the stomach, and found that viscus inflamed, mortification had been produced in one part, and the coats of the organ were perforated. This destruction, it was ascertained, was caused by the administration of one or more doses of the bichloride of mercury.

I have reported the above case as one instance. Such injurious practices, however, are, to our knowledge, far from uncommon. Even horse-masters themselves, claiming to do what they please with their own, often do permanent injury by indiscreet use of medicine. In taking leave of this subject, we can but express our conviction that great loss must result if very active agents be administered to animals by persons not qualified by education to understand effects, and when and what medicines are required. And when we see writers in newspapers prescribing the most potent poisonous drugs for animals, though in ever so small doses, for unknown or ill-understood affections, we look on such as exceeding the bounds to which popular instruction should be limited.

Protection from Ignorance. The Stimulus of Competition. By a Retired M.R.C.V.S.

(To the Editor of the Edinburgh Veterinary Review.)

Sir,—I am indebted for the opportunity afforded me, in your August number, to state the reason why I think the policy of prosecuting quacks is not one calculated to enhance either the honour or the public usefulness of our profession ; both which great desiderata, I believe, can only be secured by acting faithfully up to the principle that merit wins its own reward, without the aid of pains and penalties. Another of my reasons was the very great difficulty, if not absolute impossibility, of materially injuring, by a prosecution and fine, the most slippery scoundrels of the fraternity of advertising quacks. A very powerful argument in support of my position, was furnished in

the temperate and excellent leader (p. 491), in which you had occasion to reproduce the remarkable advertisement of Mr Hugh Ferguson side by side with that of a Mr Webb of Balsham, of whom you observe, that "his is not the kind of knowledge which the farmers of Great Britain care for, and which he *lowers himself* by advertising." To the words in italics I respectfully take exception. Mr Webb cannot lower himself; nay, more, it is impossible to lower him. So with all his species.

My position derives additional support from your two last leaders on the Prizes to Horse-Shoers at the Cleveland Agricultural Society's Show at Yarm, and the Free Studentship at the Edinburgh New Veterinary College. What I maintain is, that the principles involved in these two movements are *the* principles, the carrying out of which, in various ways and on all possible occasions, can directly conduce to the advancement of our profession.

I make it a point to read carefully, every month, Mr Gamgee's (senior) Lectures on the Principles and Practice of Shoeing, and fully agree with him on the great importance of the subject, and on the prevailing lamentable ignorance respecting it. I am not, however, so sanguine as he appears to be as to the possibility of making the junior members of the profession study the subject, unless by way of exception. In proportion as smattering instruction, miscalled education, becomes more common; as it is every day more and more the custom to confound all men decently attired under the head of gentlemen, and the inference is acted upon that, to be a gentleman, the great requisite is to look like one on the surface; in direct measure as the fetters of fashion become more and more binding, I fear the difficulty of persuading young people that the noblest life is one of usefulness, and that no work is degrading which belongs to one's calling, will be found to increase. If my memory serve me correctly, I have somewhere read that, even in France, the professors at the veterinary colleges have had reason to regret the decreasing aptitude and disposition of their pupils to receive practical instruction in the forge, in proportion as they enter the college more, if not better, instructed, and as greater demands are made upon their time for the study of accessory sciences. If this be the real state of things, it is very clear we have only one alternative—to organise some plan for giving some sound instruction to farriers, and raising them, or, at any rate, a section of them, from the degraded level in which they have been suffered to remain. How often, at present, do we see a young man fresh from the London College without any practical instruction whatever on the foot and shoeing, commence practice with the indispensable forge, professing to despise *the farriers*, laughed at by them for his ignorance, unable to cope with the most numerous class of cases in his practice—lamenesses—and having resort to all manner of artifice to endeavour to mask his want of knowledge! Empirically the working farrier acquires a certain amount of information; but how much better would be his position if he had the means of obtaining some

knowledge on the economy of the foot! It has been urged that the competition at Yarm only tested the dexterity of the horse-shoers; but depend upon this, the spirit of rivalry, once set working, will stimulate the men to seek information, and substantial progress will be the result.

The causes of the state of things herein indicated, are worthy of some notice. In the memory of men still living, the veterinary profession, with exceptionally learned and influential recruits, sprang from the old farriers. As these have disappeared, a growing inclination has become manifest to discard all connection with the farrier's shop—the forge. Young men have been told, by their fastidiously-attired and mannered superiors, that the great source of humiliation in the veterinary profession, was the forge; the great remedy, to discard it. Teach a man to despise a thing, and you may be thoroughly certain he will neglect to cultivate it. Thus has the forge been looked down upon, and, as a result, has followed the state of ignorance on the economy of the horse's foot in health and disease, which, I am convinced, will render the movement initiated by the Cleveland Agricultural Society one of the greatest possible importance.

I have heard it remarked, that as surgeons were compelled to sever all connection with the company of barbers before they could obtain status as a learned profession, so will it eventually prove to be the case with veterinary surgeons and farriers. No comparison could be based on more dissimilar data, or be more instructive in untruth. Without pretending to be learned in the history of medicine, I think that, for all practical purposes, I am right in stating that the barbers were originally called in to perform operations of minor surgery by the monks and others learned in physic, who deemed it a degradation to bleed and to dress sores. The result was a progressive intrusion of the inflated barbers, until by and by they coupled surgeon with their designation, and a regular brotherhood was organised, if not chartered, as the company of barber-surgeons. With the advancement of knowledge, the members of the medical profession learned that it was honourable, and not degrading, to perform every operation necessary for the relief of their patients' suffering; and they accordingly threw off the alliance with the barbers which they had sought in bygone days, when they were slaves to false pride—the fruit of false teaching. Totally different is the state of our own case. With very rare exceptions, the treatment of all the diseases of animals was entrusted, in olden times, to the farriers, from whose ranks the modern veterinarians have sprung, in great measure, as a necessary consequence. The preservation of the foot in health, and the treatment of its diseases, yields in importance to no other department of the profession; and I am utterly at a loss to understand how men can be supposed to know that which they have never learned, or to learn that which they are told, by one of those gentlemen whom Bulwer tells us the tailors manufacture, is of no use and below their notice. While penning these lines, the postman has delivered at my retreat a copy of the

Scottish Farmer. I hope you will re-produce the article on 'Veterinary Jurisprudence.' It supplies abundant evidence in support of the position I have taken, after long and varied experience.

One word as to the Free Studentship at the New Veterinary College. To the student who gains it, it will be a great boon; but that is only a very small part of the advantage which will accrue from it. It will give a general impetus to a number of competitors, all of whom will be benefited in their exertions by the knowledge they will thereby acquire; and in proportion as the taste for knowledge grows, the good fruit will multiply. For the growth of good and of evil, let it ever be borne in mind, is a process akin to catalytic action. "A little leaven leaveneth the whole lump."

The great desideratum is, that the Royal College of Veterinary Surgeons should do something in earnest, by instituting an inquiry into the working of the present system of examination, and in the possibility of stimulating pupils and teachers to greater exertion. Never mind that the Royal College has no power of interference with the schools. It can none the less influence them, and, in spite of drones, issue the command, *Move on*, with a certainty that it will be obeyed. Let the stimulus of competition be put in action in all possible ways, and it may safely be relied upon that we shall derive the full measure of advantage from the working of the great protector against the Siamese monsters—*Indolence* and *Ignorance*.

When the Royal College had but two affiliated schools, its position was indeed precarious; but the case has been altogether different since the authorities of the New Veterinary College of Edinburgh have inaugurated, and faithfully pursued, a policy having no other aim but the good of the profession, and working under the banner of our dearly-bought constitutional privileges. Far be it from me, even now, to admire a love of action excelling in vigour and wanting in consideration. On the contrary, I think it is impossible to be too cautious, or to be too assiduous in endeavours to heal the wounds of the past; nevertheless, every possible reason appears to me to point to the necessity of inquiry. Hitherto, I fear, the Council of the Royal College of Veterinary Surgeons have appointed, but have known nothing officially of the proceedings of their Boards of Examiners. Let the chairmen of these boards report to the Council, and let an interchange of views be instituted, to the end of testing the real knowledge of the candidates for the diploma, and, by raising the standard, stimulating teachers and pupils to increased exertion.

That the Council of the Royal College of Veterinary Surgeons are *the only body in the United Kingdom* having the power to grant admission to the Veterinary profession is undoubted; their action as an examining body is unfettered by any restrictions whatsoever. What I insist upon is merely this;—that it is incumbent upon the members of Council, as the repositories of a high trust from the Crown, to discharge that trust with scrupulous conscientiousness. At present the Council have no official knowledge of how the trust is discharged.

If such be the case, and I challenge contradiction, that knowledge should be obtained. I can only see one way of obtaining it, and that is happily an easy and regular way—by the Council conferring with their Boards of Examiners.—I am, Sir, &c.

A Retired M.R.C.V.S.

Protection from Quacks. By W. Elam, V.S., Huddersfield.

(*To the Editor of the Edinburgh Veterinary Review.*)

Sir,—In compliance with your request in the article on "Protection from Quacks," in July number of *Edinburgh Veterinary Review*, I may inform you, that in this small town and neighbourhood, within a circle of three miles, there are no less than eleven quacks, five of whom have their names on plates as veterinary surgeons, and pass off as such to the public. I hope you will spare no pains in order to obtain a law to put a stop to such a state of things; for we are nearly eaten up with them here. I think it is high time this matter was taken up in earnest by the Council, and pushed to an issue; and I am sure you will be welcome to all the influence and support I can command.—Yours, &c.

Wm. Elam, V.S.

Non-Expansibility of the Foot of the Horse. By R. H. Dyer, Waterford.

(*To the Editor of the Edinburgh Veterinary Review.*)

Sir,—Having read the Lectures upon the Principles and Practice of Shoeing (so far as they have appeared in the *Review*), I cannot but express myself gratified by the perusal of the remarks made by the distinguished Professor, with regard to the *non-expansibility* of the foot of the horse. We all know what the ancient, as well as the modern teachings have been, with reference to this part of the subject—how the learned demonstrators endeavoured, with all their zeal and energy, to make pupils understand the way in which the *Frog* caused the foot to expand, &c. I do not forget, when an esteemed friend (who now ranks with the dead) used all his eloquence to descant upon the structure and functions of the various parts of the foot; and took much pains to convince us that it, more particularly the heel, would expand to a very great extent: and viewing the parts as they appeared in his hand, no person could deny that such was *not* the case. So far as his reasoning and arguments went, they seemed to me conclusive. When, however, fortune favoured me with the superintendence of a forge, I was greatly puzzled to discover how, or in what way, the expansion of the foot took place. I said it must be so, of course; because it was part of our teaching, and taught by those who knew the subject they were endeavouring to inculcate. Still, years rolled on, and as the worthy Professor has asserted, step by step, I would

examine the shoes, both fore and hind ones, as they were removed from the feet. Anxious to learn and understand how all this was brought about, I have found that two words have been very much confounded, viz.: *expansion* and *widening*. I feel assured that, if these two words are studied, and thoroughly understood by young practitioners, we shall all begin to think we have committed most egregious errors in believing that the foot is an expansive organ, rather than that, by a certain mode of treatment, it becomes *wider* and wider, permanently, or narrower, (as the case may be when diseased). The only action that I have been able to discover in the foot of the horse, is that of *compression* of the soft parts; there being sufficient allowance made inside the wall or horny box, as it is termed, for this to take place. There is no *lateral* action whatsoever, except in some instances when the whole foot is *twisted*, as it were, upon the ground. This is produced by *imperfect* action of the limb: more especially do we find these things in horses whose *toes are turned out*. Looking at the wall of the foot, and the upper surface of the shoe, we learn that most of the points of bearing of both wall and shoe are in a polished state, and just as much on the one as upon the other; or, in other words, the smooth surface of the wall, and the polished surface of the shoe, exactly correspond the one to the other, except in cases where, as Mr Gamgee asserts, a shoe has been loosened. For some years past, I have held these views, but had not the moral courage to publish them to the world.

Mr Gamgee has, however, supplied us with the result of his profound researches, and has generously given his labours to the world at large. The work which he has commenced, will, I am convinced, soon convert not a few even of the older members of the profession, who must have thought as I have done, of the errors we have all committed in this part of our study. And I feel proud to think that, ere long, the gentleman who presides over the New School will have established for himself a name, not inferior to any of his contemporaries. I would, in conclusion, earnestly entreat all lovers of the profession to secure to themselves the privilege of reading the views and opinions of so sound a reasoner as the worthy Professor has shewn himself to be upon this branch of the veterinary art.—I have the honour to be, &c.,

RICHARD H. DYER.

Tetanus. By BENJAMIN SMITH, M.R.C.V.S., Ulverstone.

ON the 27th August, I was requested to attend a brown horse, nine years old, of the hackney breed, the property of a farmer, residing seven miles from here. Upon my arrival, the animal presented the following symptoms:—Stands with his head and neck stretched out; ears pricked, as though attentive to sound; countenance anxious. His fore legs wide apart; hind ones placed under his body, with the hocks bending outwards. Abdomen tucked up, with a well-defined ridge from costal cartilages to ilium. Tail erect, with a quiver-

ing motion. When I approached him he became excited, and threw up his head, the membrana nictitans issuing over his eyes. The pulse was about the natural number, the artery feeling hard; respiration hurried; the visible mucous membranes injected. Bowels constipated; urine passed with difficulty; the temperature of the body was natural, the skin feeling tight; the muscles of mastication were not much affected, as his jaws were separable to a short distance; all over the rest of his body feeling hard and cramped. I examined him very minutely, but could find no wound or injury of any kind; neither did his owner ever know of him receiving any injury. His feet were quite right, no pressure or pricks from nails. On inquiry, I found that this horse had been unwell a few days, having been driven a long journey on a very wet day. *Diagnosis.*—Tetanus.

Treatment.—The loose-box being all that is requisite for a tetanic patient—viz. quiet, well-ventilated, and dark,—I allowed him to remain; bandaged his legs, and put heavy clothing on him. I then administered aloes Barb. ʒvi. in bol. Ordered soft, easy digestible food, and injections frequently. At night, he got belladona ext. ʒii. placed in his mouth, which he sucked.

28*th*, 10 A.M.—Found my patient worse. He had never moved during the night. Bowels not acting; no fæces passed with injection; muscles of mastication were more cramped, rendering the administration of medicine difficult; pulse increased in frequency; respiration hurried and intermittent; nostrils dilated; animal excitable at the least noise he hears. He had eaten a little food during the night. His legs and body feel warm, but not perspiring.

I administered aloes B. bd. ʒiv. in bol., and ordered belladona ext. ʒii. night and morning, injections often during the day, and soft food.

29*th*, 5 P.M.—There was now a little change. The medicine had purged him moderately; but all the other symptoms were still the same. He feels warmer, and perspires; still he won't move, and is very anxious-looking. I continued with belladona ext. ʒii. night and morning, injections, and soft food.

30*th*.—The animal, I think, is improving. He walks round his box with a straddling gait. He feels warm, the muscles not so hard, and the abdomen does not present that tucked-up appearance. Tail now in proper position; pulse softer; respirations more tranquil; appetite good. Not so excitable as he was yesterday; still the membrana nictitans issues over his eyes when his head is raised. I continued the belladona ext. up till the 31st; injections were also given. I saw him again in a few days, and he was perfectly recovered, and since has been turned out to grass, and is doing well.

Heart Disease in the Horse. By THOS. CAMPBELL, V.S., Kirkcudbright.

AFTER reading in No. XVII. of your *Review*, an article on heart disease in the horse, by Mr James Horsburgh, Dalkeith, I beg to

make a few remarks on a case which I have attended lately, the subject of which is a mare nine years old, well bred and a fast trotter, and I believe, previous to being in her present owner's possession, she had done a great deal of hard work, in both saddle and harness. I may also state, part of that work was in the field in following the hounds. I was called to attend her on the 15th of August last, and found her presenting the following symptoms:—declined to feed or drink; head kept in a depressed position; she would occasionally extend her fore legs out before her, and her hind ones back, standing in that position for some time, then move about a little and lie down; when down lying quiet; pulse, from twenty-five to thirty in the minute, sometimes the one number, and sometimes the other, and every four, five, or seven beats, it would stop for the space of two or three ordinary beats, and proceed again; legs, ears, and muzzle, all cold; surface of body even under the normal temperature. I told the owner I feared she had heart disease, and he seemed afraid of losing her, she being a favourite. I gave her a stimulant composed of ether, sulph., and aqua ammonia in water, had her legs hand-rubbed and bandaged with flannel, also a horse-cloth over her body; ordered her a little warm mash as soon as she would take it, and six hours after I gave her a diuretic ball composed of potassæ nitras and resinæ *aa* ℥iv., saponis mollis, q. s. She soon got better, and continued apparently well until the 30th, when I was again called to see her. She at this time presented the same symptoms as already detailed. The same treatment given, with a little walking exercise. She again soon got better; her pulse was more frequent, but always irregular, and is so still. I find her pulse far more regular when she has come newly off a journey: when standing in the stable, it is slow and irregular; although she has been working almost every day since last attack, and on Friday, the 7th of September, she trotted a distance of twenty-two miles in two hours and ten minutes. I advised her owner to dispose of her, as I was doubtful he might lose her without her giving much warning.

The following is a case of a cow:—

Sometime ago, when attending a horse belonging to a farmer in the neighbourhood, I was asked by the person who was feeding some fat cows to look at one of them, as she told me the cow had not been feeding well for a few days previous, although the farmer himself thought nothing was amiss with her. I examined her pulse, found it very frequent and intermittent, so much so that I said she had heart disease, and that they should dispose of her as she was in condition for the butcher. I was then told that the cow was sold to a flesher in Kirkcudbright, and was to go away on the Saturday following. I said they would require to walk her very quietly, or she might fall down by the way. The flesher delayed going for her on the Saturday, and the consequence was, the cow dropped down dead in the stall on the Sabbath. The cow's pulse was very frequent, the mare's is quite the opposite.

Should you think these worthy a place in your valuable *Review*, I shall be glad you will give them publicity.

Case of Distention of the Stomach, Colic, and Vomiting, in the Horse; with Recovery. By R. L. Hunt, M.R.C.V.S., Birmingham.

The following instance of vomiting in the horse, and subsequent recovery, is, I think, of sufficiently rare occurrence to deserve recording, especially so as another case of vomiting has recently occurred in our practice. The latter proved fatal, and is described by Mr Parker in another page. It seems a curious circumstance that two instances of a comparatively rare pathological phenomenon should occur so closely together to the same individuals.

The patient in question is a black pony, of Welsh breed, six years old, the property of Mr Johnson, of this place; and on the afternoon of the 14th of September, he was driven in a phaeton from here to Shirley Street, a distance of about seven miles, at a fair pace, doing the distance in about an hour. He was fed whilst there, eating about a quartern of beans, with a few oats, and some chaff, and then driven home a little faster than before, but not hurried. He had some water, and more corn and hay given him, and left for the night. On going to him between six and seven, he was found in pain, and from the state of the stable, and the scars upon him, it is supposed that he had been suffering the greater part of the night, the corn and hay being still untouched.

He was brought to the infirmary, and I saw him a little before eight o'clock, and found him with the usual indications of colic—pawing, lying down, and rising, looking at his sides, &c.; not in an extreme degree, *but continuous, no intervals of ease*, and the pulse not particularly full, and fifty. He had staled on reaching home the previous evening, but had not dunged during the night.

My impression was that my patient was labouring under indigestion and constipation, produced by exertion, on a distended stomach, and that distention produced by beans, which, on becoming saturated with the fluids of the stomach, had swelled and produced the results we saw; the early digestive process being interfered with by the pony being urged to exertion immediately after a hearty meal. I administered Tr. Aconite M. x., Aloes Barb. ʒv. in haustus immediately, and enemas. No alteration having taken place, with the exception of the pulse rising ten beats in the minute, I repeated the aconite and enema at eleven o'clock, and he drank some water. The pain continued unaltered until half-past two. No action on the bowels taking place, the suffering of my patient, although still great, was not so great as I have seen in cases of enteritis or colic; and my opinion with respect to the impaction of the stomach still remained unaltered, I again repeated the aconite and enema, the pulse (evidently one of irritation) had now reached eighty. No action on the bowels yet, the enema returning almost unchanged in colour.

At four the pain became less, the pulse fell in frequency five beats, and softer, and the pony stood obstinately in one corner of his box. I continued the enemas at intervals during the afternoon, and at eight o'clock was looking at him, with the proprietor, when, without any apparent exertion, and unaccompanied by any noise, but with a sort of

eructation, he discharged about a wine-glassful of sour fluid, mixed with portions of masticated hay, through his nostrils. It was observed by us both, and a third person who was by at the time, and I immediately stated my opinion of the badness of the symptom, and the probability of his non-recovery.

This act was repeated again, after the interval of about ten minutes, the pulse continuing at seventy, the pony suffering less pain, and being more comfortable. He continued discharging small quantities until eleven o'clock, when I shut him up and left him for the night, really not knowing what to do. On seeing him again in the morning between five and six, I found him still standing in the same position in the box, with the straw pawed away from the corner where he stood ; and the wall in front of him, and the bricks on the floor, bearing evidence of the quantity that he had vomited during the night, which I should estimate at about three quarts, allowing for the fluid that had evaporated or been absorbed. Some dried egesta adhering to the edges of the nostrils led me to conclude that vomiting had ceased some time. The pulse was now sixty, and he drank some water, and, on being turned to the manger, picked a few blades of green meat. All this I had removed, and kept him without food. At twelve o'clock, on the 15th, a small but healthy dung was passed of well-digested food, free from any accumulation of mucus, and not harder than usual. He now eat a little green meat, and I let well alone, administered no medicine, and waited to see if the aloes would act. He continued improving through the day, and had no return of the vomiting, and during the night passed three healthy lots of fæces, which I carefully searched for indications of undigested food, none of which I found, and, had I not known the case, should have imagined that they came from a horse in perfect health. At eleven o'clock, on the 16th, the aloes acted, and, after about three or four nice pultaceous evacuations, his appetite was restored, and he made a capital recovery ; the only deviation was, that as the pulse gradually returned to its normal state, it intermitted for two days at forty. He is now (the 20th Sept.) at his regular work, and, with the exception of rather swelled legs, indicative of debility, and his scars from knocking about, in his usual health.

Remarks.—From what I observed of the above case, my theory is this :—That the pony's life was saved by its vomiting ; that the muscular coat of the stomach, from distention, had ceased to act, and digestion with it ; that the muscular fibres at the cardiac orifice had participated, and that the more fluid portions of the ingesta had mechanically flowed into the lower portion of the œsophagus, the action of which was thereby excited, and eructation and vomiting were the results. The absence of any violent effort of the abdominal muscles (or, as far as I could judge, of the diaphragm), leads me to the conclusion, that a portion of the contents of the stomach being disposed of, the organ then became capable of acting, and the alternative, *ruptured stomach*, was thereby avoided. That the whole affair was stomachic, and not intestinal, the perfectly healthy appearance of the fæces is, I think, a proof.

Vomiting in the Horse. Case by J. M. Parker, M.R.C.V.S., Birmingham. With a Commentary by J. Sampson Gamgee, Surgeon to the Queen's Hospital, Professor of Clinical Surgery in the Queen's College, Birmingham.

On Saturday, August 24, at 8 P.M., I was requested to attend an aged white gelding (supposed to be about 20 years old), the man saying that he was griped. On arriving at the stable, I found that he was in great pain, his respiration hurried, the pulse 56, and full, the mucus membranes very pallid, and the extremities cold. (A draught, consisting of Sp. Æther: Nit. and Tinct. Opii. *aa.* ʒj. was administered, I may add, before I saw the horse.) A peculiar odour prevailed in the stable, and on looking in the manger I found a quantity of masticated food; and on asking when the horse had been fed last, the answer was, "About 2." A further investigation convinced me that the matter I saw in the manger had been vomited, as there was an unmistakeable gastric smell about it; and on stating my opinion, the driver said, "He has passed some fluid through his nostrils several times since 4 o'clock, when I first saw he was bad." I did not wait long before the patient retched and coughed, and a gush of fluid came from his nostrils. After this first retch, the fluid came at intervals for about ten minutes, without any noticeable muscular action. Some water was given him, which he swallowed with avidity; that remained in the stomach about five minutes, and then flowed out of the nostrils gently, the horse trying apparently, all the time the water was dribbling from his nose, *to swallow it again.* The acute colicky pains had ceased in about fifteen minutes after I saw him, but there being no action of the bowels, I gave six drachms Aloes Barb. in solution, and two drachms Sp. Ammon. Arom. and enemeta were ordered (which were persevered with till his death). The draught was vomited instantly, and another shared the same fate. He lay down quietly in a short time, and on leaving him at 10.30, I found his pulse had fallen to 40, and was weaker, and there was the peculiarly-distressed look about the eye, that betokens a bad case. He had staled once.

7 A.M.—25*th.* The vomiting was now constant, and as fast as the fluid was caught in the manger, it was again swallowed, so there was a continuous supply. I now sent for my friend, Mr J. Sampson Gamgee, thinking the case would interest him; and both feeling sure it was a hopeless case, the pulse being imperceptible, and the surface of the body quite cold, no further treatment, beyond the glysters, was tried. I saw him again at 12.30 and 3.30, and at 4 A.M. 26*th.* He died without a struggle, the vomiting continuing to the last moment. The only other instances of vomiting that I have seen in the horse, have been associated with ruptured stomach, and in these cases there has invariably been violent retching; but whether the vomiting ruptured the stomach, or the ruptured stomach caused vomiting, I don't know. The present patient was very old, and had been at hard work

constantly. He never was known to be ill before. I had noticed that lately he looked "withered," and dull. The food that he last had consisted of about half-a-peck of crushed beans and oats, and he was not worked immediately after. He also had some water, as I inquired particularly, having known stomachs ruptured from the want of that necessary; and when I first saw him, I thought it probable that his stomach had given way. J. M. PARKER.

WHEN I first saw this horse (7 A.M., August 25), he was standing in the stall, apparently free from pain, but in a state of great prostration. Surface cold,—no pulsation perceptible at the sub-maxillary. The manger was half-full of dirty, sour-smelling fluid, which, I was informed, had previously been ejected through the nostrils. The patient was turned round, and offered a pail-full of clean water, of which he took several draughts with avidity. Scarcely, however, had he raised his head from the pail, when the water poured back in a small, though even and continuous, stream through both nostrils. The out-flow was not associated with action, or even tension, of the abdominal muscles, nor with any other movement, except of the œsophagus, which appeared to be in a state of alternate contraction and dilatation during the ejection, as during the ordinary process of deglutition. Some of the fluid which I collected, while flowing from the nostrils, in a small clean basin, proved to be opaque, and sour-smelling. It slightly reddened litmus, and contained no solid matter, with the exception of an oat.

About one o'clock the same day, my friend Mr D. W. Crompton saw the horse eat a handful of hay, and he noticed the masticated pellets descending the œsophagus. In a very few minutes, some of the hay was returned by the nostrils. Doubting whether it had really reached the stomach, he requested some water to be placed before the horse. A considerable quantity was swallowed with eagerness, and almost immediately afterwards the animal stretched out his head, and with a distinct spasmodic effort of the abdominal muscles, expelled hay and water out of, and at some distance from, the nostrils and the open mouth. The ejection in the first instance, to use Mr Crompton's words, resembled regurgitation, but the subsequent act was unmistakeably one of vomiting.

I superintended the *post-mortem* examination at 9 A.M., on the 26th August. On opening the abdomen, I observed evidence of slight and very recent, but decided, peritonitis. In many places the line of contact of contiguous curves of intestine was marked by a thin film of plastic matter. The colour generally was pinkish, and this effect proved due, on close inspection, to very fine ramiform and maculiform injection. The colon and the cœcum distended with an enormous quantity of dry, hard, and very imperfectly digested food. In the dissection of the œsophagus to the pharynx, the thoracic cavity was laid open;—its contents perfectly healthy. At this stage of the proceeding a ligature was tightly applied to the duodenum,

about 6 inches from the pylorus, and the stomach, with the œsophagus, removed from the body. The stomach was largely distended with semi-liquid material; on grasping the cardiac extremity, and more particularly the insertion of the œsophagus, it felt firm and normal. No fluid escaped through the œsophagus, after considerable pressure, in all directions, was exercised upon the stomach. Having ascertained that the œsophagus itself was perfectly healthy, I cut it off about eight inches from the cardiac orifice. Still no fluid escaped when the stomach was compressed. I noticed that with each act of compression, the cut end of the cuticular lining of the œsophagus projected beyond the muscular coat. Having ascertained that alteration of the angle of the œsophagus produced no effect on the obstruction to the flow of liquid, I drew out the cuticular lining, and held it open by gentle traction. The water then flowed out freely, though very slight pressure was exercised on the viscus, and though the cuticular lining was immediately left free. When laid open, the coats of the stomach proved healthy, and its contents to consist of undigested chaff and corn, with a large quantity of water.

It cannot be doubted that some of the expulsive efforts which had been witnessed during life by Mr Parker and Mr Crompton were acts of vomiting, in every sense of the term. The return of liquid by the nostrils, of which I was witness, was so gradual, and unaccompanied with effort, that, but for the previous and subsequent facts observed, the correctness of regarding the case as a *bona fide* one of vomiting, might be open to question. I regard it as established that three forces concur in the mechanism of the act of vomiting—firstly, the action of the stomach; secondly, of the abdominal walls; thirdly, of the diaphragm. Experiment and clinical observation have proved that the first is itself sufficient to effect the regurgitant evacuation of the stomach. In the present case, I am of opinion that the stomach and diaphragm were simultaneously active, in ejecting the liquid which I collected. The concurrence of the abdominal muscles is equally certain, in the previous and later expulsive efforts.

I regard the case as affording conclusive evidence of the correctness of the opinion I first advanced in 1852, that no mechanical reason is deducible from the mode of construction of the alimentary canal of the horse, why he should not vomit. The conditions of the stomach and intestine in Mr Parker's case were precisely those which would produce vomiting in man, and I see no cause for changing the conclusion to which I was led by experiment, that, were the nervous system of the horse more susceptible than it is to emetic influences, that animal would vomit more frequently and more effectually. In other words, the conclusion at which I have arrived is, that the reason why the horse rarely vomits is functional and nervous, not muscular and mechanical.

Amongst the moderns, M. Fluorens is the principal supporter of the theory of sphincteric action at the cardia, as the obstacle to vomiting in the horse. His teaching was based on experiments, on a number of dead horses' stomachs, which were held to prove that when

filled with fluid, the pylorus being subsequently tied, none escaped from the cardia, however powerfully the viscera were compressed. My own experiments led to conclusions so diametrically opposite, that finding myself, then a student in medicine, at variance with one of the most distinguished French savans, on a question of fact, I repeated the investigation many times, carefully excluding all possible sources of fallacy. My results were the same—the only legitimate conclusion that M. Fluorens had, after the lapse of a century, fallen into the same error as Bertin, only differing from him in more widely and eloquently proclaiming it.

Had the experimenters borne in mind that they were operating on dead horses' stomachs, even supposing it true that the cardia did offer an insurmountable obstacle to regurgitant fluid, they should, *a priori*, have avoided the error of referring the impediment to sphincteric action, essentially an attribute of life, the exercise of which is impossible in death. In the case which has occasioned these observations, evacuation of the stomach through the cardia was effected with great facility during life, but proved an impossibility when I removed the stomach from the dead body. The obstacle was overcome by gently drawing out for a few moments the cuticular lining of the portion of attached œsophagus. The accidental folds of the loose thick lining of the dead tube had occasioned a mechanical impediment, which in life had no existence.

Were I called upon to descant on the causes of error in medical reasoning, I could select no more fertile and demonstrative theme than this of vomiting in the horse. But such is not my present purpose, and I shall therefore conclude, by referring those who are desirous of further studying the question, to the memoirs, already referred to in the course of these brief observations.[1]

J. Sampson Gamgee.

Impaction of the Rumen of a Cow. By George Robertson, M.R.C.V.S., Dudwick, Ellon, Aberdeenshire.

The case in question was a fine three-year-old cow. On the morning of the 3rd September, she was observed not feeding as usual. On my seeing her, I found her very dull, pulse 60, but weak, left side very much distended and would pit on being pressed, eyes bloodshot, urine scanty and high coloured; she gave a moan or grunt at each respiration. I gave her Mag. Sulph. ℥xx., Nitrate of Potash, ℥ss., Zingiber, ℥ss. This was given in some thin gruel. Enemas were given every hour, through the day and night; large quantities of diluents were also given at short intervals.

4th September.—Symptoms more aggravated than yesterday; medi-

[1] "An Inquiry into the Reasons why the Horse rarely Vomits." By Joseph Sampson Gamgee. *London Journal of Medicine*, 1852. "A further Inquiry into the Reasons why the Horse rarely Vomits." By Joseph Sampson Gamgee. *Veterinarian*, 1857.

cine has not operated. At 10 o'clock A.M., I gave Oleum Ricini ℥x., Ol. Crotonis 60 gr., diluents and enemas continued as before. At 7 o'clock P.M., I gave other 42 gr. of Oleum Crotonis, suspended in a little thin gruel, and applied with rags wrung out of boiling water to abdomen, and over the region of the rumen especially, which had the effect of allaying the swelling over the rumen; the lacteal secretion is completely suspended.

5*th.*—8 o'clock A.M. Symptoms the same as before; the bowels still inactive. I determined on giving her other 35 grs. of Ol. Crotonis in a little gruel as before. I have still continued my enemas and diluents. At 8 o'clock P.M., I again gave her Ol. Lini, ℥xx., Char. Hydrarg. ℥jss., Ol. Crotonis, 40 grs. I now left her, believing that next morning I would find her dead.

6*th.*—Still alive, and at 10 o'clock A.M. the medicine began to operate, but the fæces were not in such a fluid condition as one would anticipate; have continued my diluents, but was obliged to give up my enemas, the rectum appeared very irritable.

7*th.*—8 o'clock A.M., gave her Pulv. Gent. ℥j., Pulv. Ginger ℥j., Amm. Carb. ℥ss. I gave this in order to rouse the action of the stomach, which, I may say, was completely paralysed. At 8 o'clock P.M., I repeated the above dose; I also gave her two bottles of gruel. She has not the slightest inclination to eat or drink.

8*th.*—8 o'clock A.M., gave her as before, two bottles of gruel, in which was suspended the former dose. She would now eat grass, but I have not allowed her to get any, as she has never yet attempted to ruminate. She appears thirsty, and I have allowed her water *ad libitum.* Four o'clock P.M.; she has now commenced to ruminate, and at 8 o'clock P.M., I repeated the above dose, and gave also Ol. Lini. ℥xvi., Mag. Sulph. ℥viii. I gave the latter, as the fæces were getting somewhat hard.

9*th.*—8 o'clock A.M.; gave her again two bottles of gruel with the usual condiment. I have now allowed her a little grass, as she is still continuing to ruminate. The teats have been drawn to-day, and some milk has been got, which, in appearance, resembles colostrum or first milk. The medicine given last night, beginning to operate at 6 P.M.

10*th*—She now appears convalescent, and would eat more than we can allow her. I have given her half-a-bottle of porter to day, and to be continued twice daily for some time.

14*th.*—The cow now appears perfectly well, eating and ruminating freely; the milk also is quite normal in quality, though not in quantity; the porter is now discontinued.

I attribute this case of impaction to be due to the coarse, indigestible nature of food she had been getting for some time, and more especially as this cow was a most voracious feeder, and the rumen being filled to repletion, and rumination being suspended, fermentation had evidently taken place in the impacted stomach. I am fully of opinion, that, had it not been the large quantity of croton which was given that produced purgation, the cow must have been lost.

REPRINT OF REMARKABLE MEMOIRS.

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Observations on the Variolæ Vaccinæ, as they occasionally appear in the Vale of Aylesbury, with an Account of some recent Experiments in the Vaccination, Retro-Vaccination, and Variolation of Cows. By ROBERT CEELY, Esq., Surgeon to the Buckinghamshire Infirmary.

(*Continued from page* 549).

VACCINATION OF THE COW WITH PRIMARY LYMPH.

NEVER having observed or heard of the occurrence of cow-pox, in this neighbourhood, in any other than milch cows, I was desirous of ascertaining the degree of susceptibility of the sturk (or young heifer) to the disease, and its attendant phenomena, when artificially induced by primary lymph. I commenced, therefore, by vaccinating some of these animals, about ten months old, in the inside of the ear, on the teats, and in the soft and vascular structure on and near the vulva, with lymph taken from milch cows in the winter of 1838–9, while the disease was prevalent in many of our dairies. Punctures were made in the ordinary way with lancets well charged and with points thoroughly imbued with good lymph; two or three of the latter were broken off short, and allowed to remain in each wound. Although I could not boast of the almost unvarying success which attends the casual vaccination of the milkers,[1] yet I found much less difficulty in succeeding than I had supposed, or than is experienced in vaccinating these animals with lymph taken from man. Though the punctures in general were early inflamed—on the second day—the papular stage was not well marked, and appeared postponed, the vesicles were normal, but declining on the eleventh day. On the teats there was much tumefaction of the integuments until the thirteenth day. On the parts near the vulva the vesicles, though declining on the eleventh, occasionally revived and declined for two or three days, as they often do in the natural and casual forms. When the crusts fell spontaneously at the proper time, a moderately deep smooth scar was observed; but if prematurely removed, a deep erosion of the skin ensued. On the inside of the ear the vesicles appeared less developed, though the lymph was reproductive. No indisposition in the animals was noticed beyond a slight acceleration

[1] These men, without knowing it, are unquestionably the most successful vacinators with primary lymph, and the most careful too, for they never neglect Bryce's test. We cannot fail to be vexed at their destructive proceedings, and impatient of their general lack of discrimination; but we must stop to admire the splendid success of their performances, which it would be well if we could imitate. They may indeed smile at our puny efforts!

of the pulse. The lymph used in the above experiments was from the same source and of the same date as some which had been applied to children and adults. On these last, however, it either failed altogether, produced more or less imperfect vesicles, or perfect vesicles with the areola not fully developed till the twelfth, thirteenth, or fourteenth, and fifteenth or sixteenth days. The lymph resulting from these vaccinations of the cow, taken on the tenth day, and transferred to man, differed in no respect from that which has been described,[1] except that the inflammation and induration at the base of the vesicles were certainly less considerable, and the subsequent scars rather less deep, but remarkably well defined, and even now appear to have extended through two-thirds of the substance of the corium. I could not spare subjects to carry on this lymph.

VACCINATION OF THE COW WITH HUMANIZED LYMPH, OR RETRO-VACCINATION.

My experiments in retro-vaccination were almost entirely confined to the sturk under twelve months old; and the parts selected for the operation were those in close proximity to the vulva. These animals were easily procured, while milch cows in any number, at least here, are difficult to obtain for such a purpose. The parts chosen are most easy of access, and in every respect, I think, most desirable.[2] The operation was performed either with a lancet or a sharp straight bistoury. The lymph was either dry, or liquid in capillary tubes. No other precautions were taken than excluding the animals from wet and cold immediately after the operation for a few hours or perhaps a night. Those of a light colour and with thin skins were generally preferred, but often without avail, scarcely one-half of the operations succeeding. Tubercles, nearly or completely lymphless, were often produced; but sometimes every puncture succeeded. In the majority of instances the vesicles ran the normal course, declining on the eleventh day. Four kinds of lymph were at different periods employed, each having been current in man for a longer or shorter period. But a detail of some of these experiments will best explain some interesting particulars elicited in their progress.

Retro-vaccination with lymph which had been several years in use.—It appeared sufficiently active, and from arm to arm was attended with satisfactory results. *Subject:* a small ill-conditioned sturk, strawberry coloured, thin skin. Seven punctures were made near the vulva, and eight points inserted recently charged with fifth-day lymph from a fine child on the 1st February, 1839.

Second day.—Nothing remarkable.

Fourth day.—Some of the lower punctures rather red.

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[1] Pages 545 and 546.

[2] The scrotum of the male sturk (young bull) would answer very well; indeed, on the continent, I learn that it is very often thus appropriated.

Fifty day.—Scarcely any traces of punctures left.

Sixth day.—Punctures appear perfectly passive.

Seventh day.—Two punctures rather elevated and inflamed.

Ninth day.—All the punctures raised in the normal form, but in different degrees, the vaccine tumours being of different sizes; tried to procure lymph, but failed, both on the surface of the tumid margins, which yielded only blood, and in the centres, where there is a slight crust.

Tenth day.—There are four fine large and three small vesicles, from two of which were charged one hundred points, abundantly, with clear adhesive lymph, some of which was used on the same and subsequent days. The punctures made yesterday had given rise to the exudation of lymph which is now visible in the form of light amber-coloured concretions on the parts.

Eleventh day.—The vesicles appear diminishing, and amber-coloured lymphatic concretions are formed in their centres. *Vespere:* Crusts enlarging; vesicles subsiding.

Twelfth day.—Upper vesicles have a pustular appearance in places; others have a yellowish brown crust; others flattening.

Thirteenth day.—All subsiding; crusts larger.

Fourteenth day.—Subsiding.

Fifteenth day.—Crusts more elevated; margins flatter.

Sixteenth day.—Declining.

Seventeenth day.—Intumescent ring nearly disappeared; black crusts alone remaining.

Eighteenth day.—Everything diminishing.

Nineteenth day.—Small elevations in the site of the vesicles, still lighter than the ground.

Twentieth and twenty-second days.—Some crusts prematurely removed by accident; others spontaneously fell on the twenty-second and twenty-third days, leaving small pale rose-coloured smooth scars, slightly depressed in the centre.

February 26th.—Inoculated with liquid small-pox lymph (variola discreta, seventh day), in five punctures, from capillary tubes, on right side of labium pudendi, the wounds being at the same time deluged with fluid.

Third day.—Slight tumidity around the punctures.

Fourth day.—A shining glassy tumidity around the punctures, which are larger.

Fifth day.—In *statu quo.*

Seventh day.—All subsiding; no result.

March 12th.—Re-inoculated with dry sixth-day confluent small-pox lymph, inside and outside the left labium pudendi, with several points; four punctures. Re-vaccinated with seventh-day "variola vaccine" lymph,[1] two removes, inside and outside of the right labium pudendi; several points; four punctures. No result from either.

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[1] Vide Variolation of the Cow.

Experiment second.—June 6th, 1839.—Retro-vaccination with lymph which had been in use at the Small-pox and Vaccination Hospital since March, 1837. It was then introduced by Mr Marson, the resident surgeon, from casual vaccine vesicles on the hands and arms of a dairy woman, to the ultimate exclusion of the old lymph, whose declining activity Dr Gregory had long noticed, and has clearly pointed out.[1] *Subject:* a young sturk, colour strawberry, skin thick; lymph used from points and tubes; punctures four, deep, near the anus and vulva.

Third day.—All the punctures closed with a plug of adhesive or "modelling" lymph, but all tender.

Fifth day.—Three of the punctures tumid and tender, filled with a black plug.

Seventh day.—One very fine vesicle near the anus, on a dark fleshy ground, with a thin central crust; two smaller vesicles below. Charged twelve points with great difficulty, used some the same day, and sent others to the Small-pox and Vaccination Hospital.

Eighth day.—Large vesicle glistening, but a little flattened from the loss of lymph; centre filled with a hard crust, which was removed; appearance bloody and raw, and no more lymph could be procured. The smaller elevations do not appear to increase.

Ninth day.—Large vesicle increased in size, is plump and glistening, hot and tender; centre depressed and filled with dark central crust, which has everted edges. The other two scarcely altered.

Tenth day.—Vesicle arrived at its maximum of development, and remarkably fine. The smaller ones are abortive, or lymphless tubercles.

Eleventh day.—Evidently flatter; black central crust has its centre depressed; tubercles flatter.

Twelfth day.—Vesicle much flatter, with projecting crust.

Fourteenth day.—Intumescence nearly gone, crust remaining; very small crusts in the two smaller supposed tubercles, proving that they did furnish some lymph.

Twentieth day.—A small crust still remaining on the site of the large vesicle; nothing visible on the others.

Twenty-third day.—A very small smooth scar visible on a dark ground, from the large vesicle only.

Twenty-sixth day.—*Re-vaccinated* in four punctures, eight points, and two tubes charged with eight-day retro-vaccine lymph.—Fifth day: slight tumefaction of the edges of the punctures; three wounds, raw; one closed. Failed.

Experiment third.—July 9th, 1839.—Retro-vaccination with points charged with "variola-vaccine" lymph, nineteenth remove. *Subject:* a young sturk, colour red and white, skin dusky and thin; punctures four, very superficial, and not deeper than was necessary to hold the points, as in ordinary vaccination, inserted near the vulva.

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[1] *Medical Gazette*, February 24, 1838.

Second day.—Inserted four more points of the same lymph in the four wounds of yesterday.

Third day.—Punctures closed with plugs, rather inflamed.

Fifth day.—Punctures rather tumid; three plugs removed; four small vesicles resembling the vaccine in man, three reddish, flesh-coloured, and glistening, on a dusky ground; centres depressed.

Sixth day.—The four vesicles rather more enlarged, more distinctly vesicular, of a bluish colour, two upper more elevated, two lower flatter, but all glistening with a bluish tint blended with a pale rose near the base.

Seventh day.—Vesicles contain more fluid, look bluer, have a pale lead colour, irregularly blistered, very little raised, centre depressed, base reddish flesh colour; charged three points with turbid opaque fluid.

Eighth day.—All four vesicles broken, have been slightly rubbed, and the blue cuticle rather rumpled; no hardness of the base; no elevation; no fluid to-day; no central crust.

Ninth and tenth day.—No induration at the base; no central crust.

Eleventh day.—Vesicles have a thin brownish crust, and fragments of lead-coloured cuticle, but no marginal induration.

August 1st.—Re-vaccinated in four punctures with "variola-vaccine" lymph, twenty-one removes. Slight scars of the previous vaccination visible. No result.

Experiment fourth.—July 13th, 1839.—Retro-vaccination with retro-vaccine lymph, obtained from the second experiment, and from that, the fifth remove. *Subject*: a young sturk; skin dark, not very thick; colour red and white; punctures four, very superficial, as the last, near the vulva.

Fourth day.—No apparent effect; re-vaccinated by opening the closed punctures and inserting four more points charged with the same lymph.

Tenth day, (22nd July).—Four vesicles at their acmé, with slight central depression, and slight annular red areola; no central crusts; colour of the vesicles, dirty yellowish white. Charged eight points with a turbid fluid.

Fifteenth day.—Nothing apparent but four small crusts the size of a small vetch, brownish black, depressed in their centres; slight redness around one of them.

Twenty-third day.—Small scars visible. Re-vaccinated carefully on the 10th of August. No result.

Remarks.—The subject of the first experiment had been in very poor condition a short time before, but the effects of my improved diet at the time of the operation had become visible, and the enlargement of the cysts of the Æstrus bovis, (or warbles as they are often called), abounding under the integuments on either side of the spine, evinced a favourable change in the condition of the animal. Though I am not able to state the precise age of the lymph employed in this

experiment, I have every reason to believe that it had been current for several years. It was mild, certainly, but sufficiently active, and could be depended on to produce the ordinary local and constitutional effects, from arm to arm, rarely failing to yield a vesicle for every puncture, particularly when taken on the fifth or sixth day, which it very commonly might be, a practice I was then pursuing with a belief in its advantages. Hence it was used at that period on this animal. Beyond a slight acceleration of the pulse, no perceptible change in the animal's health was noticed. Considerable topical tenderness and heat were unequivocally manifest.

In vaccinating the cow with primary lymph, it will often happen, as in this case, that the resulting vesicles appear suddenly to assume their characteristic form, without passing through a palpable and progressive stage of papulation, as if they had *forgotten* to rise; they are apt thus to be despaired of by the vaccinator. Similar phenomena, it will be recollected, are noticed in the description of the natural and casual disease. Analogous occurrences, from various causes, we know, take place in man, especially in using primary, retro-vaccine, and unassimilated lymph. The difficulty of obtaining lymph till the tenth day, which occurred in this case, is not uncommon when the vesicle is deeply seated in the corium; but tenth-day lymph from such vesicles, as before stated, is as good as that of an earlier date; it certainly succeeds as well, sometimes better, the points being more fully charged. Though the vesicle appeared so late, it still commenced its decline on the evening of the eleventh day; the lymph, instead of raising the cuticule, as in man, at the margin of the vesicle especially, or acuminating in the centre, as it often does in the natural and casual disease, under different topical circumstances, was slowly discharged upon the epidermis through fissures made in vaccinating and abstracting, and thus formed a central crust.[1] Slight pustulation is sometimes observed on the margins of vaccine vesicles, even without accidental irritation.

The lymph, taken on points thoroughly and trebly charged, and immediately used, produced perfect vesicles. The papular stage, however, was late—the sixth or seventh day; but the areola was complete on the tenth, and declined on the evening of the eleventh or twelfth day. It was employed on subjects of different ages, and, with this exception, and some vesicles being rather smaller, the local and constitutional effects did not differ materially from those resulting from its former use. The slight change which it had undergone in its transit through the cow was not apparent after the third remove, when it appeared to possess no more than its former qualities. The object of the subsequent variolation and vaccination is sufficiently manifest: both entirely failed.

The subject of the second experiment possessed a much thicker and darker skin than that of No. 1. Similar experiments with this

[1] See Natural and Casual Cow-pox.

lymph on subjects apparently more eligible had failed, and even in this case, although liquid lymph from tubes, as well as points recently charged, was used, but one good vesicle arose out of four punctures, yielding a very small quantity of lymph; the other vesicles were ill-developed, and presented only, on their decline, slight and ambiguous traces of lymphatic exudation.

In man the lymph employed for this experiment was prompt and effective, possessing the desired "maximum of vaccine intensity," as those who have used it or seen its effects at the Hospital can testify. In this subject, too, the papular stage was short, but lymph was obtained much earlier than in the former experiment, though the quantity was very small, and none could be readily procured after the seventh day. This lymph, transferred to eligible subjects, produced vesicles in various degrees of perfection. The areola was not at the height till the twelfth or thirteenth day, papulation not appearing till the fifth or sixth day; but by the third remove it acquired its former power, and its use was followed by vesicles of the greatest perfection and beauty. The same results attended the employment of the charged points forwarded to the Small-pox and Vaccination Hospital; and when I observed there the vesicles of many subsequent removes, I was incapable of distinguishing them and their effects from those produced by the parent lymph. The lymph had gained nothing by the transit; it could not be improved. Imperfectly developed vesicles, such as appeared in this retro-vaccination, are not unfrequently observed; the presence, though late, of concrete lymph in the centre is the only means of judging of their character; tumours tender, circumscribed, and glistening, are frequently produced, and slowly subside without this indubitable sign. The course of the vesicle here was perfectly normal, and it affords a good specimen of a vaccine vesicle on a thick dark skin, yielding, as usual, very little lymph. This animal was not only re-vaccinated, on the subsidence of the disease, without effect, but was tested on the seventh day with its own lymph, and also with small-pox lymph, but with doubtful results in both cases, there being merely glistening, well-defined, but equivocal lymphless tubercles in both sets of punctures.

In the subject of the third experiment the skin was very thin and of a singularly dusky colour. The punctures were designedly made as superficial as in ordinary vaccination with points, for the purpose of producing a variety in the character of the vesicle. The lymph was little more than four months old, but had failed in previous attempts at retro-vaccination on other subjects apparently equally favourable. The punctures were again opened on the second day by the thumb and finger, in near imitation of the re-infecting process of the milker. The first operation it appears was successful. Lymph, in very small quantity, was obtained on the sixth day immediately under the epidermis, which, however, was not raised. There was never much secreted, and the vesicles did not exhibit the induration and marginal elevation, &c., which other vesicles do when implanted deeply in the

corium. The lymph was not used, but would have been available, though a little turbid. Very minute crusts subsequently adhered to the centres of the vesicles; the scars were slight, smooth, and superficial. This animal was re-vaccinated with liquid lymph, and inoculated with small-pox lymph twice before the eighth day, with the production only of tender and reddish elevations around the punctures, but not affording unequivocal appearances of the formation of lymph. Re-vaccination after the decline of the disease had no result.

In the fourth experiment the skin was thicker than in the preceding subject; the lymph scarcely more than one month old. The punctures were made as in that case, with the same object, and with the same result,—the production of a vesicle more nearly approaching in character the human vaccine. The effects were as prompt and as regular as in the former case, and on the tenth day a scanty supply of rather turbid lymph was obtained. In the first removes the vesicles were postponed a day or two, or diminished, but on the third had acquired their former perfection. This animal, also, was inoculated and re-vaccinated before the sixth and seventh days without any satisfactory result from either sets of punctures.

GENERAL OBSERVATIONS.

These experiments are neither intended nor calculated to illustrate the best mode of vaccinating or retro-vaccinating the cow. The method here used was adopted, as before stated, more for its convenience than from any belief in its superiority. Other plans of procedure, doubtless, there are, better calculated to ensure a greater measure of success. Nevertheless, it does appear that many individuals are affected with difficulty, or are altogether insusceptible by the ordinary known modes of vaccination. Even those persons who profess to have "discovered, after a long series of experiments, a mode of perpetuating the natural cow-pox at will,"[1] confess that a selection of subjects must be made. Probably much of the difficulty attending the operation, and impeding or preventing its success, depends upon the condition of the tissues as natural to the subject, or as induced by season or circumstances. Whether with points or with tubes, some subjects are promptly affected; while others, in every respect, to all appearance, not less eligible, require a repetition of the process, and then yield but a small number of vesicles for a large number of punctures. The difficulty and uncertainty of the operation, by our usual defective means, are still further manifest by the apparent failure and doubtful effects of Bryce's test, employed in two of these experiments, as well as in others. I have made incisions into the cellular tissue and inserted crusts of natural cow-pox; the wound has healed without any result. The above experiments, however, will serve to show the greater difficulty of vaccinating the cow with

[1] Vide *Lancet*, June 26th, 1839.

humanized than with primary lymph, and that, when successful, a much milder disease is the result. Take an abundance of humanized lymph from one of the finest and most productive vesicles ever seen, and if you succeed in retro-vaccinating the cow, you may perhaps be able to charge scantily only a very few points from a vesicle which excites but trifling topical inconvenience. Vaccine lymph, it is obvious, therefore, in passing from the cow to man, undergoes a change, which renders it less acceptable and less energetic, on being returned, to many individuals of the class producing it; some refuse it altogether. But this reluctance or absolute refusal, this difficult imbibition or total insusceptibility, does not exist to the same extent as observed in the converse of this experiment, viz., in passing primary lymph from the cow to man by the same means. Here we have considerable difficulty; but when we succeed, a severer disease is induced. These experiments clearly show that the *age* of humanized lymph does not seem to influence its reception by the cow. Provided that the lymph be of ordinary activity, and possess the normal qualities, it is as likely to succeed in its operation on the animal whether it may have been current in man a few weeks or many years, and will excite equally perfect and productive vesicles. The effects of retro-vaccine lymph on man, as compared with primary and current lymph, are worthy of notice. Lymph which had passed from arm to arm with the greatest promptness and facility, and produced the finest effects, in its first removes from the costive vesicle of the retro-vaccinated cow, is not so readily absorbed by many individuals. It rarely fails; but papulation is retarded, and though the vesicle may attain maturity at the normal average period, the completion of that stage is frequently postponed. The vesicles are often smaller, and the disease really not so well developed, as by the stock from which it was derived. But these changes do not appear after the second or third remove. The lymph is restored to its former qualities, and produces its former effects. Some of the retro-vaccine lymph of the second experiment, transmitted to the Small-pox and Vaccination Hospital, from whence it was originally derived, was passed through a long series of subjects, under the inspection of Dr Gregory and Mr Marson, who, though better able to make the comparison, were unable to detect any sensible difference in its local or constitutional effects after the second remove. On the third remove it became "very fine," as it was before its transit through the cow.[1]

Is the practice of retro-vaccination of any real value as a means of renovating humanized vaccine? I confess, that from my limited experience, (these few observations and experiments), I am unable to

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[1] I cannot allow this opportunity to pass without an expression of my obligations to Dr Gregory and Mr Marson for their great kindness, civility, and attention at all times, and for much valuable assistance afforded me on many occasions.

discover its advantages, or to admit more than its questionable utility, from one transit through the cow. What humanized vaccine might acquire by repeated and indefinite transmissions, I am not prepared to say. From what has been observed above, I have no doubt that primary vaccine, passed by artificial means through a series of cows, would lose much of its acrimony, and produce on man a milder but abundantly active and characteristic disease; but that humanized vaccine, by a similar process, should ever acquire all the attributes of primary vaccine, or become so much more *brutalized* as to deserve the epithet of "renewed," is more than many are prepared to expect. Few persons, I apprehend, are likely to succeed in conducting such experiments; and being of doubtful utility, in the estimation of many, the difficulty, trouble, and expense necessarily attending them, will, in all probability, long operate to the exclusion of positive proof. But it has been stated by those who doubt the advantage of a single transmission through the cow of lymph which had passed through many individuals, who may be variously affected with the germs of scrofula, &c.,[1] that where primary cow-pock is not met with, and the vaccine hitherto in use shows a falling off in its essential properties, "retro-vaccination is advisable." But if vaccine lymph, at any time, and under any circumstances, shall have lost its *essential properties,* surely the chances of a successful, much less a useful, retro-vaccination of the cow are very few. It is highly probable that by a proper selection of the animal, and an experienced choice of topical and other advantages, pretty uniform success may be obtained with the use of ordinary lymph; but when we see the effects of the very best and most recently humanized lymph on parts of the animal not ill-adapted to the operation, it seems reasonable to fear that lymph deprived of its "essential properties" is not likely to prove a very manageable agent. This, in fact, is practically admitted by the best and most successful retro-vaccinators, who select the lymph for their operations from "well-developed vaccine vesicles.[2] But, from facts which will shortly appear, although the practicability of the operation may not be disproved, its utility may be still further questioned.

Before quitting this subject, I may be permitted to make a few brief remarks on the following question: Is vaccine lymph, in passing through many individuals with all due care and selection, susceptible, in process of time, of actual degeneration or essential diminution of intensity? Without speculating on the asserted immutability, under ordinary circumstances, of the essential properties of any known morbid poison, which seems to me not quite so easily maintained, or entering into a discussion as to the safety or propriety of implicit reliance on the analogy instituted between a virus of human and one of brute origin, I shall content myself with a

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[1] *British and Foreign Medical Review;* Dr Prinz; January, 1840, page 85.
[2] *Ibid.*

reference to facts. In warm climates it is well known that actual and speedy degeneration does take place. In India, at Silhet, we are told by Mr Brown, in a highly interesting paper on the regeneration of the vaccine,[1] "that in the course of three or fourth months the lymph gradually changes to a thin purulent-looking fluid, of a dirty white colour at first, and afterwards more resembling thin pus of an unhealthy character. Vaccination from such sources puts on the appearance of the pustular variety of imperfect and irregular vaccine noticed by Bateman—premature formation with much itching: the constitutional influence about the eighth day is rather less in this than the regular vaccine, and it is necessary of course to discontinue the practice from such degenerate virus." In other places these changes occur at different periods. Now is it unreasonable to inquire whether, in other climates, under the influence of occasional intemperature of season, slight changes may not take place, from time to time, which may ultimately lead to actual though less palpable alteration in some of the qualities and properties of vaccine lymph? Without presuming to assert that this is the *cause*, it seems impossible to deny the *occurrence* of the fact in temperate climates. M. Bosquet, whose zeal, ability, and experience in the practice of vaccination are well known and justly appreciated, in a very interesting and satisfactory memoir on this subject,[2] in comparing the vaccine of 1836 with that from which it was derived in 1800, by the aid of a coloured engraving, clearly shows a positive diminution of intensity, and explicitly states that the course is changed:—"*Aujourd'hui la pustule vaccinale n'est jamais plus belle, plus apparente qu'au septième jour, mais cet état ne dure pas; à peine est-elle entrée dans le huitième jour, qu'elle jaunit et le vaccin se trouble; dès le lendemain, la desiccation commence au centre et elle marche si rapidement que la croûte, réduite à la grosseur d'une lentille, tombe du quinzième au dix-huitième jour.*" An accompanying engraving illustrates this perspicuous description, and contrasts the character and stages of the lymph in question with some new vaccine, found at Passy that year, which had then passed through scarcely twenty-five removes, and which M. Bousquet considers threatened with the like fate. Dr Gregory[3] had observed that the vaccine lymph which had been in use at the hospital for a long period was of "diminished intensity—eight or ten punctures produced not more irritation than the three to which he had been accustomed fifteen years before." New lymph from a different source was introduced by Mr Marson, and was found to be far more intense and active than the old. Three or four punctures were now amply sufficient; and Dr Gregory,

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[1] *Quarterly Journal of the Calcutta Medical and Physical Society.* April 19, 1837, No. ii.

[2] *Notice sur le Cow-pox decouvert à Passy, &c., &c.*, 1836.

[3] *Report on Small-pox, &c., &c., Medical Gazette*, February 24th, 1838, page 860, No. xxii.

assured of the superior quality of the new lymph, discontinued, eventually, the old, and concludes his report by the expression of a belief that vaccine lymph, passed through the bodies of many persons, loses, in process of time, some essential portion of its activity. It is worthy of remark that the conclusions both of M. Bousquet[1] and Dr Gregory are contrary to former belief.[2] Mr Estlin, whose success in obtaining, and whose kindness and laudable diligence in diffusing, a new and active lymph, are well known, and properly estimated,[3] states that in his opinion the alterations in the vaccine affection consist in —first, the smallness of the vesicle and its attendant areola; secondly, its rapid course; thirdly, the absence of constitutional disturbance; fourthly, the small quantity of lymph yielded by the vesicle; and, fifthly, especially the diminished activity of its infecting quality. At the Vaccine Institution at Glasgow, and by many competent persons in this country and on the Continent, similar opinions are entertained; though all do not, therefore, conclude that the vaccine, *pro tanto,* has lost its protecting property. On the other hand, persons of high authority and large experience can see no diminution of the needful activity of the present vaccine, and assert that it possesses all the exterior qualities and characters which new lymph exhibits. In a description of the variolous epidemic of 1829, in Turin, Griva[4] gives an account of a few of his own experiments with primary lymph, and analogous observations of many distinguished persons who had favoured him with a detail of theirs, and asserts that he could see no difference, at that time, in the course and operation of the ordinary humanized and the primary vaccine. That the vaccine has undergone no essential change in its protective property is maintained in the Report of the National Vaccine Establishment,[5] and the fact stated that lymph thirty-eight years old, obtained from Dr Jenner, had manifested its peculiar influence in all the numerous subjects, in descent, through which it had passed. Many others contend that Jenner was correct in his belief of the improbability of future supplies from the cow becoming necessary. Jenner remarks: "Whether the nature of the virus will undergo any change from being further removed from its original source in passing successively from one person to another, *time alone can determine.* That which I am now employing has been in use nearly eight months, and not the least change is perceptible in its mode of action, either locally or constitutionally. There is, therefore, every reason to expect that its effect

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[1] *Traité de la Vaccine. Par J. M. Bousquet.* Paris, 1833; p. 217.
[2] *Cyclopædia of Practical Medicine.* Article, Vaccination; page 413.
[3] *Medical Gazette,* September 15, 1833, No. li.
[4] *In tutti questi sperimenti era impossibile rintracciare una qualche differenza dal corso del vaccino cosi detto umanizzato.—Epidemia Vajuolosa del* 1829, *in Torino; aggiuntivi I. Lavori Vaccinici, per T. D. Griva.* Torino, 1831.
[5] *Medical Gazette,* May 19, 1838, p. 348.

will remain unaltered, and that we shall not be under the necessity of seeking fresh supplies from the cow."[1]

Let us inquire, therefore, of Jenner himself, what was *then* the local and constitutional action of the vaccine. "The constitutional symptoms," says he, "which appear during the presence of the sore, while it assumes the character of a pustule (vesicle) only, are felt but in a very trifling degree."[2] Two cases, in illustration, are detailed,—one vaccinated with primary lymph, the other from the second remove,—perfectly characteristic of the mildness of the constitutional *primary* symptoms, and not less so of the severity of the *secondary*, derived from the local, wide and deep-spreading ulceration. The latter he was solicitious to prevent by local applications, caustic, &c.,[3] remarking, emphatically, that the indisposition which was most sensibly felt "*does not arise primarily from the action of the virus on the constitution, but that it often comes on, if the pustule (vesicle) is left to chance, as a secondary disease.*" Analogy, Jenner's constant guide, here directed his judgment and determined his practice.[4] Further observations convinced him of the correctness of this conclusion; and that a single vesicle was adequate to the production of the anti-variolous effect. Repeated vaccinations also taught him that his solicitude concerning the local irritation was unnecessary, and that, ultimately, the mildest remedies were rarely required, the acrimony of the virus having been subdued.[5] Jenner's description of the constitutional and local effects of the vaccine, with the accompanying illustrations,[6] may therefore be confidently appealed to as a standard by which we may and ought to compare those of the present day. He rarely failed in communicating the disease from arm to arm; and dried lymph, he asserts, would prove effective at the end of three months.

From an early period, struck with the fidelity of Jenner's description, and always having recognised his distinction of the primary and secondary symptoms, I have looked upon the local affection, which is so much under the influence of temperament, tissue, &c., as of inferior importance, provided it did not materially differ from the average mild and normal character indicated by him. Where symptoms of constitutional affection are so mild, and often scarcely to be recognised, as in the vaccine,[7] of course it is necessary to have exterior

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[1] *Continuation of Facts and Observations on the Variolæ Vaccinæ*, 1800, p. 162.

[2] *Farther Enquiry*, page 99.

[3] M. Bousquet (*Traité de la Vaccine*) has gone much farther, and shown that the vesicle may be destroyed with caustic, at an early period, without interrupting the constitutional influence.

[4] He remarks that confluent small-pox did not more effectually prevent a recurrence than the mildest small-pox.—*Further Enquiry*, page 122.

[5] *Continuation of Facts*, page 177, 1800.

[6] *Trans. of the Provincial Medical and Surgical Association*, vol. viii., 1840.

[7] Where no complaint is made or is otherwise indicated by the patient, I have very frequently found an acceleration of the pulse mark the silent but sure progress of the disease.

local indication of the desired influence. It behoves us, therefore, to adhere as nearly as possible to the model furnished and recommended by the great discoverer of the vaccine and the inventor of vaccination. My own repeated applications to the cow have been chiefly for the purpose of experiment, for the satisfaction of patients, or the accommodation of friends, not from any belief in its superior protective efficacy over active humanized lymph. But when lymph is found uniformly deficient in infecting property, vesicles abnormally rapid in their course, at their greatest development on the seventh day, yellowish in appearance on the eighth with turbid lymph, central desiccation on the ninth, and a miserably small crust falling on the fifteenth or eighteenth day, common prudence dictates its discontinuance, and urges the adoption of a new supply, although constitutional symptoms may not be absent, for *weak* lymph may not be better than *late* lymph. There surely, in so delicate and important an affair, must be more satisfaction in using that which will affect promptly and certainly, produce a vesicle in its greatest beauty on the tenth or eleventh day,[1] which will then and even later contain a limpid and often an effective lymph, and desiccate not completely till the fourteenth or fifteenth[2] day. Such we know was the vaccine of 1800.

AFFINITY OF COW-POX AND SMALL-POX.

Neither the protective nor the modifying power of the vaccine, its co-existence with variola in the same individual, the striking resemblance in the form and structure of the two vesicles at a given period, nor its occasional occurrence as a secondary eruption,[3] had satisfied me of their common origin. So marvellous a modification of so disgusting, malignant, and contagious a disease as variola, by the medium of the cow, and its conversion into a beautiful, benignant, and non-contagious affection, which it preserved when transmitted to man, did appear to me to require positive proof to be admitted with satisfaction. The announcement of Dr Sunderland's experiments interested and astonished me, I confess, and I regretted the existence of impediments in the way of their repetition, but cherished the hope that other trials would be made to corroborate the fact. I was particularly struck with his seventh aphorism[4]:—"It is now clear why, in

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[1] As in the acuminated natural or casual vaccine vesicle.

[2] Very active lymph will require sixteen or seventeen days for complete desiccation. See page 547.

[3] *Medical and Physical Journal*, vol. ii., p. 402, (the Rev. Mr Holt's cases); and vol. ix., page 309, (Dr Adam's cases); also Dr Adams on *Vaccine Inoculation*. A young lady, a member of a family resident here, was vaccinated in infancy, fourteen years ago; during the dessication of the vesicles a secondary eruption of perfect vaccine vesicles appeared on the face and trunk, about twenty in number, and went through the regular course, leaving characteristic scars; four or five on the face, which I saw a few days since, attest the fact. A few similar cases will be presently related.

[4] *Medical Gazette*, November 9th, 1831, vol. i., No. v., page 162.

recent times, cow-pox has been seldom or never seen in the cow; for the cow-pox of the cow arises merely from infection by the variolous exhalations from men recently affected with small-pox, and coming in contact with the cow. As epidemics of small-pox have been rare during the last thirty years, cows could seldom be exposed to infection, and have, therefore, seldom exhibited the disease." I resolved, therefore, to inquire into the validity of the two propositions contained in this aphorism, viz., the origin of cow-pox from man, and the rarity of the disease of late years, doubting the correctness of the former from my own previous observations. The result of careful and extensive inquiry induced the belief that the asserted comparative rarity of the disease was true as regarded this neighbourhood. From similar inquiries, made on every suitable opportunity, among the proprietors of cattle, of individuals who had had the casual cow-pox, and from my own personal observations when the disease has arisen, I have collected the following facts:—

The cow-pox has occurred: First, during epidemic small-pox, but when no cases of variola have been known in the neighbourhood: secondly, when variola has been prevalent in neighbouring towns: thirdly, when variola has been in contiguous villages: fourthly, when in the same village (perhaps a solitary case) in which the affected farm was situate: but, fifthly, I have never succeeded in tracing positive or probable intercourse of convalescents from small-pox, their friends or attendants, with a dairy or its occupants, except in one instance, in the autumn of 1838, during which time, and the early part of the following year, cow-pox was prevalent, and in this case it can scarcely be supposed to have had any influence; the milker had carried a child some miles labouring under modified small-pox: (I merely relate these facts,[1] leaving others to draw their own conclusions, adding,

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[1] In the course of my inquiries I have heard many strange and unaccountable tales. I cannot forbear relating the following:—A resident in this town has repeatedly assured me that when a lad, more than forty years ago, he, with several others, assisted in holding a milch cow, while the late Mr Allsop, of Watlington (Oxon), inoculated it with small-pox matter in the teats and udder, at a farm called Standals, about seven miles from that place. That the whole herd subsequently had the cow-pox thus produced; he caught it from them, as well as other milkers, and great numbers of people around were vaccinated on the occasion, the small-pox being then prevalent and fatal. He understood the operation on the cow was done to render the small-pox milder; and assures me that a copious but small vesicular eruption on the body followed his casual vaccination on the hands. The matter was taken, for the cow's inoculation, on the point of a lancet out of a small bottle. Mr Allsop is dead, and I am unable to procure further particulars. I vaccinated this man: he had one *modified* vesicle, which left no permanent scar. A milker, detailing the particulars of the outbreak of cow-pox in a herd, when he caught it, more than thirty years ago, assured me that his employer had men to sit up and watch nightly during a fortnight, to detect, if possible, the approach of the d——d doctor, (in search of lymph), whom he suspected of having inoculated the cows with small-pox! his suspicions arising out of the facts that the disease was on no other farm, and the small-pox was very bad in the adjoining towns.

what I have before stated, that although occasionally I have suspected the occurrence of cow-pox in more than one individual in a dairy at a time, it is generally observed to appear first on a single cow, and spread by contact:) and lastly, that it is often seen in a single farm, but not unfrequently in several at the same period.[1]

VARIOLATION OF THE COW.

Nothing but direct experiments seemed capable of determining the point at issue; but unfortunately there were many difficulties in the way of performing them satisfactorily. I expected only negative results, and therefore considered it proper not to attempt any experiments except under a concurrence of the most favourable circumstances. These were not to be met with at any time; and arrangements for the purpose, made in the spring of 1836, were set aside for want of a sufficient number of eligible subjects. Under a more satisfactory concurrence of events, in August, 1838, I commenced some experiments, with a view to ascertain the possibility of infecting the cow with variola, after the manner of Dr Sunderland.[2] I invested two milch cows and one heifer, all in calf, with the sheets and blankets of a small-pox patient. The sheets and blankets had been used for a deceased patient, and were removed from the same bed where lay another patient under confluent small-pox of the twelfth day. The two milch cows were shut up in their shed for three days and nights, and afterwards for three days more, but let out at night. During their confinement they perspired freely from the warmth of the covering. The heifer was placed under an open shed during a week. I could discover no indisposition, nor find any eruption on any part of them. A fortnight afterwards all these animals were inoculated with small-pox virus of the fifth and ninth day, on glasses, by the lancet and by seton, in the ear, the udder, and the teat, but without any apparent result. On examining the setons inserted into the udder, *three months* afterwards, they were found *firmly adherent to the parts into which they were inserted, and as passive as if they had been passed through leather.*

This fact afforded a tolerably correct notion of what might be expected from the tissues of such animals; but they were subsequently *vaccinated* with points, setons, and the lancet, on the teats, udder, and back, with recently-taken eighth-day lymph. No result.

One was subsequently re-vaccinated with liquid lymph of the seventh day, *two removes from the cow* which had furnished it. No result.

One of these animals was, some time subsequently, *reinvested* with blankets from the bed of a small-pox patient of the ninth day. No result.

Such inconclusive results could not be otherwise than unsatisfactory. This, to me, at least, did not appear to be a land of promise,

[1] Vide page 475. [2] *Medical Gazette*, Nov. 9, 1831, vol. i., No. v., page 162.

but a *terra incognita*, enveloped in clouds and abounding in mists, and where retreat was as difficult as advance was discouraging. Reflecting, however, on the experiments of M. Viborg, of Copenhagen,[1] on other animals, the statements of Dr Sonderland, and the varied results of similar experiments by Dr Numann, of Utrecht,[2] and those said to have been performed in Egypt,[3] but considering more especially the strong presumptive evidence advanced by Dr Baron,[4] that variola had been common to men and brutes, and the not unfrequent occurrence of malignant vaccine, if not of actual varioloid disease, in the cows of Bengal,[5] I resolved to persevere; and accordingly subjected several sturks (young heifers) to variolous inoculation. The following are the details of one of the series of experiments, and their results:—

February 1st, 1839.—Inoculated three sturks with small-pox virus, (variola discreta), seventh or eighth day, on large points—the teeth of a comb—charged twelve hours previously. Sturks about ten months old.

Experiment first.—Red and white sturk, thin skin, gentle, well-bred. — Made seven punctures, and introduced fourteen points, charged half their length, near the left side of the vulva and below it. Inserted two setons, charged with small-pox virus from the same subject, at the same time.

Fifth day.—Two or three of the punctures tumid, all closed with brown plugs; setons tumid.

Sixth day.—Some punctures tumid.

Seventh day.—Less tumid.

Eighth day.—Still less so; setons passive, dry, adherent.

Ninth day.—No material alteration, and therefore *vaccinated* on the *right side* of the vulva, in seven punctures, with fifth, sixth, and seventh-day lymph, on fourteen points, from a young child; and *below* the vulva, in four punctures, with eight points.

Tenth day of variolation, second of vaccination.—Some of the variolated punctures hard and elevated; but *one*, near the margin of the vulva, has assumed the form and appearance of the vaccine vesicle; it is nearly circular, has an elevated margin, and a small crust in the depressed centre. By gently removing the central irregular crust, and carefully puncturing the cuticle from under which this appears to have exuded, lymph was obtained, and thirty-eight points were scantily charged in the course of an hour. Vaccinated punctures on the right side, rather red and elevated.

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[1] *Medical and Physical Journal*, vol. viii., page 271.
[2] *Johnson's Medico-Chirurgical Review*, Jan., 1834, page 208.
[3] *London Medical Gazette*, vol. i., page 673.
[4] *Life and Correspondence of Jenner*, vol. i.
[5] *Ibid.*, vol. i. and ii.; also *Quarterly Journal of the Calcutta Medical and Physical Society*, No. ii., April 19, 1837.

Eleventh day of variolation, third day of vaccination.—The circular indurated intumescence, forming the margin of the vesicle, somewhat flattened and diminished. Vaccine punctures more red, larger, and more elevated. *Evening:* more crust in the centre of the small-pox vesicle; margin less elevated. Vaccine vesicles advancing.

Twelfth day of variolation, fourth day of vaccination.—Margin of the small-pox vesicle more elevated and red; central crust darker; two of the other variolous punctures more tumid, but without lymph, still merely tubercular. Vaccinated punctures more tumid and inflamed.

Thirteenth day of variolation, fifth day of vaccination.—Small-pox vesicles more inflamed, nearly as florid as the mucous membrane of the vulva, which has lately assumed a bright rose colour. Every puncture made for the vaccine lymph (five days since) effectual, vesicles of different forms and sizes being now apparent. Charged some points from them.

Fourteenth day of variolation, sixth of vaccination.—Small-pox vesicle has less marginal induration, seems flatter, and crust partially loosened. Vaccine vesicles, some partly subsiding, some a little pustular, others still red, and all surrounded by indurated borders.

Fifteenth day of variolation, seventh of vaccination.—Small-pox vesicle enlarging; crust larger; indurated elevated margin of the vesicle quite circular, red, and glistening towards the centre. Vaccine vesicles larger and more elevated. Took from them more lymph.

Sixteenth day of variolation, eighth of vaccination.—Small-pox vesicle diminished; crust increased and loosening. Vaccine vesicles also diminished, some rather pustular; crusts brown and pale yellow, some crusts abraded partially, others loose.

Seventeenth day of variolation, ninth of vaccination.—Small-pox vesicle has scarcely any redness on its border; crust remaining. Vaccine vesicles diminishing, and covered with blackish brown crusts within their circular or oval margins, which are much flattened.

Eighteenth day of variolation, tenth of vaccination.—Small-pox vesicle very much flattened. Vaccine vesicles equally so, covered with black crusts of different sizes.

Twenty-fifth day of variolation, seventeenth of vaccination.—Scar of small-pox vesicle apparent; it is deep, wrinkled, and of a pale rose colour. Scars of the vaccine vesicles differ only in being smaller, less deep, and have more induration around them.

March 12th.—Re-inoculated with small-pox virus (confluent) of fifth and sixth day, in three punctures, several points, in the labium pudendi. Re-vaccinated in three punctures, several points, with sixth or seventh-day retro-vaccine lymph, second remove. The next and three or four subsequent days the punctures were somewhat tumid, but soon again subsided. No result.

Experiment second.—White sturk, thin skin. February 1st.—Inoculated in seven punctures, near the left side of the vulva and on

the under fold of the labium of that side, with fourteen points, charged, as in the Experiment, No. 1, from the same source; and with two setons, charged in like manner, near and below the vulva.

Third day.—Incisions tumid, encrusted.

Fourth day.—Less tumidity, less crust.

Fifth day.—Incisions appear healed; two or three more tumid than the rest.

Sixth day.—Some incisions more tumid.

Seventh day.—Less tumidity.

Eighth day.—Still tumid, but not advancing.

Tenth day.—Seem lymphless tubercles.

Eleventh day.—Tubercles less elevated; setons passive.

February 15th.—Re-inoculated with small-pox virus of the seventh and eighth day (variola discreta) on the left side of the vulva and under fold thereof, as before, and near the verge of the anus. Virus liquid, some pellucid, some opaque and puriform, in capillary tubes, was forced into eight punctures, which were deluged with it; the punctures being afterwards irritated with points deeply charged with the same, which were suffered to remain in the punctures.

Third day.—Nothing remarkable.

Fifth day.—Four upper punctures near the verge of the anus, enlarged and elevated; four on the under fold of the labium, elevated and red, but less enlarged.

Sixth day.—All present the appearance of the vaccine vesicle. The four upper are larger, but seem only tubercular; four lower, on the under fold of the labium, have a deep damask hue, and appear like oval or circular solid elevated rings, with central depressions; from one of these took clear lymph with much difficulty, and scantily charged thirty-nine points.

Seventh day.—Upper tubercles seem diminishing, lower vesicles seem flatter, but broader.

Eighth day.—Four upper appear still tubercular, of a lighter colour than their ground; four lower vesicles rather augmented, have a light damask hue. Took lymph again from one of them; the other three, not readily yielding lymph on a careful puncturing, were not further disturbed, from a desire to witness their progress; slight central crusts.

Ninth day.—The four vesicles enlarging; again opened the inner margin under the daily increasing central crust of the vesicle first opened, and charged twenty points; tubercles diminishing.

Tenth day.—One of the tubercles rather larger; four lower vesicles increasing. Charged twenty-seven points. Vesicles have a bluish, reddish, glistening appearance; two of them rather red at the base; one or two rather raw on each side.

Eleventh day.—Brown crusts cover the centre of the vesicles, which appear declining.

Twelfth day.—Declining, with increasing crusts of a blackish brown colour, within a sightly elevated margin. *Vaccinated* in

several punctures on the margin of the right labium with many points, well charged with sixth-day retro-vaccine lymph; two removes. Punctures slightly tumid for a day or two, but quickly subsided. No result.

March 12th.—Four scars, as large as peas, in the situation of the four vesicles, depressed pale, rose colour. *Re-inoculated* with small-pox virus, (confluent), fifth day, in four punctures, on inside of left labium. *Re-vaccinated* in three punctures, many points, of fifth and seventh-day lymph from a child. No result.

Experiment third.—February 1st.—Sturk, dark red and white; thick coarse skin. Inoculated in seven punctures, fourteen points, on the right side of the vulva, and beneath it, in the same manner and from the same source as No. 2. Two setons, charged with small-pox virus, inserted still lower.

Third day.—Punctures tumid.

Fourth day.—Incisions closed with dark brown plug.

Fifth day.—Tumid.

Sixth day.—Several punctures tumid.

Seventh day.—Less so.

Eighth day.—Appear subsiding.

Ninth day.—Only one or two small tubercles, and they are perfectly lymphless.

Tenth day.—Diminishing in all respects; setons passive.

February 15th.—Re-inoculated with small-pox virus of the seventh and eighth day (variola discreta), on the left side and under part of labium and verge of anus, with liquid virus, some pellucid, some opaque and puriform, from capillary tubes, and with points deeply charged with the same, taken twelve hours previously, in eight punctures, which were deluged with the variolous fluid, and afterwards irritated with the points which were allowed, when shortened, to remain in the wounds.

Third day.—Two or three punctures a little tumid.

Fourth day.—Some rather hard and elevated.

Seventh day.—One puncture rather more tumid, about the size of a vetch.

Eighth day.—Three or four tubercles rather larger.

Ninth day.—One (the largest) tubercle seems pustular, the others appear subsiding.

I considered this a failure, and of course did not use the pustular product of the tubercle.

This animal was vaccinated in December last, with two other sturks, with primary lymph, but without any other result than that just described. The vaccination of the others succeeded.

Remarks.—In the experiments for the purpose of infecting the cow, these animals were selected which, from their age and the appearance of their teats, had not, in all *probability*, been the subjects of the vaccine disease; they were all under four years. I could not detect any eruption by a careful inspection of those parts of the body

where it was most likely to have appeared; yet I cannot affirm that none existed in parts thickly covered with hair. All I can say is, that eruptions, consequent upon fever, are most commonly observed on parts of the animal void of or thinly covered with hair, viz., the teats and udder, as in the vaccine, the apices, chiefly, of the teats, the interdigital membrane, the skin over the coronet, of the feet, the mucous membrane of the mouth, gums, and tongue, as in the aphtha epizootica, except in the malignant exanthemata, where any part of the surface may be affected, when the hair of course falls off on recovery. I have seen, on one occasion, both haunches of a milch cow covered with a multitude of the white blisters which are apt to form on the teats and udder; but such an occurrence, at least in this neighbourhood, is exceedingly rare. It appears to me, therefore, from the absence of any fever in the animals in question, and the freedom of the parts above mentioned from any eruption, that we may fairly suppose that none occurred. I took no precaution to shave any hair from the back, which it appears was done in one, at least, of M. Numann's cases,[1] the reason for which I cannot understand. On the contrary, I took every precaution to prevent the infected blankets from coming in contact with the naked or thinly covered skin, my object being to *infect*. Hence portions of the blankets were suspended round the necks of the animals, and hung up near them, so that the variolous effluvium had every chance of being inspired. The uncertainty of these experiments, therefore, seems manifest; and the same may be said of the others, for I failed to succeed in *vaccinating* the same animals—a circumstance which at once prohibits our drawing any other inference.

The experiments by inoculation, from their importance, need a few remarks. The animals employed for the purpose were not those which I should have chosen if circumstances had permitted proper selection; but the difficulty of obtaining a *number* of milch cows upon which to operate, and *conveniently* inspect, is almost insuperable in a neighbourhood where these animals are so valuable. Few persons will permit operations which have a tendency to make milch cows irritable, much less such operations as these; and the importance of the operation requires careful and daily inspection. I decided, therefore, that there was no alternative but to subject the best I could obtain to the process of inoculation, in that manner and on those parts which I had ascertained would sometimes favour vaccination. There was an inducement also, of no trifling importance to the employing of these animals, that I was able to keep them on my own premises, and an advantage in selecting the parts, in their superior accessibility to operation, facility of daily inspection, and tolerable freedom from injury. Yet I was fully aware of the loss of those advantages which the teats and udders of milch cows were capable of affording. The animals were much out of condition when

[1] *Johnson's Medico-Chirurgical Review*, January, 1834, page 209.

they came under my care, but were beginning to improve when subjected to experiment.

The uncertainty attending similar experiments, and the importance of their results, were sufficient inducements to the adoption of every precaution calculated to avoid error and remove all possible doubt and misgiving; accordingly I took the small-pox virus myself, in the presence of my assistant, Mr Taylor, on points that never could have been used before, for they were the teeth of a large comb cut for the purpose, and charged new capillary tubes for the second experiment. The performance and progress of these experiments, as well as others of a similar nature, were witnessed by Mr William Vores, house surgeon of the Bucks Infirmary; Mr Charles Vores, his pupil; Mr Henry Lepper, veterinary surgeon, and his assistant; my colleagues at the Infirmary, Mr Henry Hayward, and Mr James Henry Ceely; and my assistant, Mr Taylor, who aided me in taking the virus.[1] The subjects from which the virus was taken were healthy young men, the pocks were remarkably fine, large, plump, and numerous; but at no time were either of the patients considered in danger. In using the points just described, I thought I obtained another advantage in having them large and capable of holding much virus, for they were doubly charged above half their length, cut in two, and allowed to remain where they were inserted, the punctures being made with a straight bistoury or a large lancet.

In the first experiment, during the first five or six days, there seemed some chance of a result in the tumefaction of the punctures; but on the ninth day, as this result seemed very unlikely, I decided on an endeavour to ascertain the susceptibility of the subject to the vaccine, and, therefore, inserted the vaccine points. The next day, to my great surprise, that which I considered an inert tubercle had assumed the form of a vaccine vesicle, and some of the other tubercular elevations had increased in size; the vaccine punctures, too, all looked red. The lymph obtained from the vesicle was perfectly limpid, and it so slowly exuded that much time was spent in charging a few points. On the following day it appeared that the abstraction of lymph had diminished the energy of the vesicle; it looked flatter, duller, and smaller in size, as if declining, yet the vaccine punctures were evidently advancing. On the next day, twelfth of variolation, the vesicle had acquired more than its former size, and looked in a most vigorous condition, with all its characters augmented; there seemed some promise, too, of some of the other variolous punctures advancing; two below the vulva were certainly larger. The vaccine punctures (fourth day of vaccination), were evidently forming, almost vesicular. On the thirteenth day nothing could exceed the interest

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[1] To all these gentleman I am much indebted for valuable assistance, on many occasions, in the conduct of these and other experiments, especially to Mr W. Vores, who has for a long time been my most zealous and untiring assistant in these pursuits.

of the scene. The highly vigorous state of the variolous vesicle—tense, florid, and glistening with a silvery hue from the tension of the epidermis, and the palpably vesicular state of the vaccine punctures, were, I need not say, very gratifying. Having before seen the temporary injury done to the variolous vesicle by the abstraction of lymph, I had not the courage to touch it again, being desirous to avoid interrupting its progress; besides I had already enough lymph, and had inserted it into the arms of some children, whom I was daily watching with much anxiety. I took, however, some lymph from the vaccine vesicles (their fifth day). Here was Bryce's test on the cow! Variola on one side in vigour, tested by vaccine on the other, hastening to declare the fact of constitutional affection. The variolous tubercles made no advance. On the fourteenth day all the vesicles seemed diminished in activity and plumpness, owing to an escape of lymph, partly from injury, partly from the use of the lancet to the vaccine vesicles. On the fifteenth day all again in an active state. The variolous vesicle was truly splendid, and had acquired a magnitude greater than what the natural vaccine vesicle is apt often to attain, and an ample crust filled the centre. This was the period of greatest development of all the vesicles; the fifteenth day of variolation, and seventh of vaccination. It will appear, therefore, from this and the next experiment, that the variolous vesicle was retarded in its development several days; instead of reaching its acmé on the tenth, as the vaccine vesicle does, it was the fifteenth. It was this tardy rising which induced me to give up all expectation on the ninth day, and vaccinate on the other side of the vulva: a happy mistake! On the sixteenth day decline in all was manifest, which was too palpable on the seventeenth to be doubted. The crust of the variolous vesicle was rubbed off prematurely, but the scar was deeper than is usually seen on the udder of the cow, and the surface rather more uneven; the scars of the vaccine vesicles were less of course, nothing remarkable, but, like the scars attending Bryce's test-vesicles in man, exhibited induration and elevation of their margins much longer than the principal vesicle. Re-inoculation and re-vaccination were performed for obvious reasons. The effect of the lymph from the variolous vesicle, which will be detailed presently, was the production of the true vaccine. The lymph from the vaccine vesicles, taken on the fifth and seventh days of vaccination, the thirteenth and fifteenth of variolation, produced remarkably active vaccine vesicles on children. The differences require to be specially described.

In the second experiment (the first attempt) there was much promise, but no result. This I have several times met with; but re-inoculation has not been attended with the successful effects which ensued in this case. It was performed in *part* in a situation where the skin seemed thin and bled freely on puncture. On the fifth day the purplish or livid pimples, so much like the natural or casual vaccine on the thin skin of the teats, at this stage announced the success of the operation *on* the lip of the vulva, and I certainly thought all

the other punctures had succeeded on the thicker skin *near* the vulva; the want of colour in these elevations was attributed to the texture of the skin there. On the sixth day every thing advancing, but the larger and colourless elevations seemed without lymph; the four glistening vesicles had a slight central crust, clearly announcing their character. Lymph was procured from one, with great difficulty, perfectly pellucid and adhesive. The seventh day the tubercular character of the four upper elevations quite manifest; they were *subsiding without a central crust;* the four vesicles had increased in breadth, and were less elevated. On the eighth day lymph was again taken from a vesicle which yielded it more readily than others; and, anxious not to interrupt their development, they were not again touched. All the vesicles were of a glassy resplendency; the tubercles were evidently passive. On the ninth day more lymph, perfectly pellucid, very scanty, was taken, the vesicles clearly advancing. On the tenth day, the day of maximum development of the vesicles, a slight areola round one of them; all had a very active appearance, and the lymph taken was perfectly limpid and quite as adhesive as before. The decline of the vesicles on the eleventh day was perfectly obvious, and precisely as in the natural, casual, and inoculated vaccine. This was confirmed by the appearances on the twelfth day. On the twenty-sixth day, the crusts having fallen a day or two, the smooth pale rose-coloured scars were observed. Re-inoculation and re-vaccination here also proved unavailing. The lymph taken on the different days was used with different degrees of effect; but, when successful, produced perfect vaccine vesicles, as will shortly be seen.

In the third experiment in neither attempt was there any satisfactory result; the skin was thick, and the animal seemed inaccessible both to variolation and vaccination, and affords a type of a great number of its tribe. The same chances in all respects as to time, season, circumstances, and manner of operating, were allotted to this animal, but entire failure was the result.

(To be continued.)

EDINBURGH VETERINARY REVIEW

AND

Annals of Comparative Pathology.

VETERINARY JURISPRUDENCE.

A USEFUL warning to every veterinary surgeon inclined to purchase horses with a warranty, is given by the case, reported in the following pages, of Turner *v.* Roebuck. The veterinary profession should, for the sake of its efficiency and reputation, have far clearer notions of the objects of a warranty than to admit of such a deviation, on the part of its members, from a prudent and advisable line of conduct. The purpose of a warranty, so far as we understand it, is to protect a buyer from much which a seller will not, cannot, or dare not disclose in making a bargain. Veterinary surgeons are recognised as capable of determining by a careful examination whether a horse is sound or not, and also to declare within certain limits whether, at a period antecedent to such examination, the animal could be warranted sound. If, however, we are to admit that a practical veterinarian may purchase a horse, seek protection for his imperfect powers of determining whether such horse is sound, and keep the animal, in doubt as to this point for several weeks, it is very clear that our skill in detecting unsoundness may very reasonably be doubted by those who pay us half-guineas for advice.

It is very much to be regretted that Professor Spooner should not have deterred Mr Turner from proceeding with the action. Is it possible for a man, though endowed with the perception of a Spooner, to determine from an examination, and from what he heard in court, that an animal declared, though disputed, as lame in the fore feet, was suffering from a disease of the feet "of long standing," and which "was in fact constitutional and hereditary."

The profession has, however, to congratulate itself on the existence of some members who can show a bold front in any such case, and disperse the mist which want of sense and a total lack of prudence had enveloped the case of Turner *v.* Roebuck. Mr Cartledge spoke entirely in accordance with the common-sense, *prima-facie* view of dozens of instances which might be quoted, including that of Mr

Turner's lame mare. He was well supported by Mr Lawson, and others, so that a jury of Englishmen had no hesitation in coming to a satisfactory conclusion in point. We trust Mr Turner may benefit by his dearly-bought experience, and that Mr Spooner will henceforward entertain a greater respect for those whom he doubtless expected to conquer by his mere presence in the Doncaster County Court, on the 5th of September.

THREATENED STRIKE AMONGST THE LONDON JOURNEYMEN FARRIERS.

From the date of its foundation, this *Review* has constantly set forth the importance of horse-shoeing, or farriery, as a most essential branch of the veterinary art; and has unhesitatingly exposed the neglected state of the craft, and the degraded condition of the men who follow it.

It is, then, no new impulse which prompts us to devote a few words in consideration of the farrier's case at this crisis.

The immediate causes for the threatened strike are not clearly apparent to us; we are fully sensible of old grievances, some of which have existed from epochs antecedent to the birth of the present generation of men; nor are we prepared to say that the horse-shoer's condition in life has been improved like that of most other bodies of men and classes of the people.

Having acknowledged that the condition of farriers (not of London only, but throughout the land) is such as demands consideration, we express disapproval of any threat or contemplation of strike; such a course could only increase trouble, bring misery amongst families, and hunger and cold to poor wives and children, when approaching winter demands the careful use of all available resources.

Counselling forbearance, whilst we promise an impartial hearing to the men, we will take a glance at the two prominent complaints set forth by the Society-men threatening to strike. They refuse to apply machine-made horse-shoes, or to admit workmen amongst them who are not members of their clubs or association. Both the above-assigned causes of threat we hold to be no grievances at all; causes for complaint which have been endured and passed over cannot justify hasty proceedings on other and wrong grounds.

We have long had it in contemplation to make some decided move in the endeavour to bring machine-power to bear on the work

of horse-shoeing; nor have we been entirely silent, though we have not gone so far as to forward the introduction of any of the shoes into London, which have led to meetings and deliberations amongst working farriers.

The whole subject of the art of shoeing horses having engaged our attention over a series of years, and having made ourselves acquainted with the regulations both of London and provincial shoeing forges, and having also felt a strong desire to see both the art and its followers placed on a better footing, we believe that we have understood where the "shoe pinches."

Not to be partial, or confine ourselves to any one suggestion or means tending to ameliorate the condition of farriers, and extend the usefulness of that important art, we have no hesitation in declaring that, in bringing machinery to bear, by preparing the iron so far as can be well done—leaving the shoeing-smith to finish the work of making the shoes, and afterwards applying them as now—a great step in advance will be achieved. A great desideratum, as a means, to be carried out by the iron-masters, is, that horse-shoe iron of all varieties of sizes may be so got up at their foundries, that the heavy work of forging shoes may be reduced to the ordinary labour of other mechanics. We are confident of the practicability of what we suggest, and that at remunerative profits to the producers of the material; whilst the end would be a boon to working farriers, no less than to the public of all countries, and is called for as much as in any of the many works in which the iron arm has done the rough hard work which tends to brutalize men.

In all attempts which we have seen to turn out horse-shoes by machinery, whilst the power to produce what is wanted has been apparent, a lack of knowledge of what would be most generally useful, and tend to forward the object required, has been evident.

The iron producer need not encumber himself with such advice as touches the principles on which horse-shoeing should be based; machinery can do nothing towards advancing principles, but much in lightening labour and leaving more mental energy and nerve in the men, so that instruction and culture succeeding may help to restore the balance, so much needed in the carrying out of the work. What is wanted, and may be expected at no distant time, to be furnished to horse-shoers, is, not what has been often attempted—ready-made shoes—but well-prepared forms or moulds, of good iron, reduced to some approach in form to a shoe, and turned out in sorted Nos., so

that they could be ordered as we now send an order for so many thousand nails. In preparing iron for shoes, the great requisite is the knowledge how to produce moulds of the weight and substance required for different horses, purposes, places, and customs; and then our foundries, with abundance of iron, coal, and superiority of machinery, would render another lasting good to the whole kingdom, and might furnish iron for horse-shoes wherever, on the continent, English iron is admitted, to say nothing of the value of such process to the colonies.

About the objection to work with none but 'Society men,' such a dog-in-the-manger cry is as incompatible with the rules of free trade as it is with fair play and common sense. All towns, and more especially the largest of all, London, are supplied with young shoeing smiths from the country, who, on their first arrival, seek work where, and for such wages as, their state of proficiency enables them to compete. By degrees they find their level amongst the established men, and bring up their wages and characters accordingly.

The second objection raised by the London farriers, however, appears to be only a part of the first, that of preventing the use of machine-made shoes, contemplating that should some of the present men refuse, fresh hands from the country would be found to do the work. We dismiss both one and the other pretence as unworthy of the farrier's cause, because representing no real grievance. To the London farriers, who take alarm at any further aid proffered in the very laborious part of their work, as now done, we submit that some continental writers and teachers in the art of farriery have begun by describing where iron is found, how to separate the metal from the ore, and the other processes through which it passes before it comes into our hands in the form of bars. Then, again, we are told about *coal*, where it is deposited, its properties, and how to make charcoal from wood. Now, the English or modern horse-shoer does not require this knowledge as an essential part of his business. We want the material, viz., iron, coal, and nails, furnished to us in the best and most forward state for use that can be procured. Perhaps some of the men are under the delusion that the rougher the state of iron when delivered to the horse-shoer, and the more work required, the better; but we are convinced that the reverse should be the aim of all promoters of improvement tending to the well-being of the farrier and the advancement of his art. As to any effect reform in the art of farriery may have on the cost of, and charge for shoeing, we shall

say nothing in anticipation. Besides much that is barbarous, there is much of the ridiculous connected with the ill-understood art of farriery. The first of these we shall treat as we have begun, by the slow process of reason; to the second, when the time comes, we shall call to our aid a few simple arithmetical figures.

VETERINARY JURISPRUDENCE.

BREACH OF WARRANTY OF A HORSE.

At the Doncaster County Court, on Thursday, September 5, the following case was heard before R. Wildman, Esq., Judge, and a Special Jury:—

SEPTIMUS EDWARD TURNER *v.* ROBERT ROEBUCK.

The following gentlemen were sworn upon the jury:—Mr Godfrey Addey, Mr Geo. D. Thorpe, Mr James Foster, Mr W. T. Bennitt, and Mr Thomas Geldert.

Mr Whitfield, of Rotherham, was for the plaintiff, and Mr Smith for the defendant.

The facts of this case, as adduced by Mr Whitfield, were as follows:—Mr Turner, the plaintiff, is a veterinary surgeon living at Tickhill, and the defendant (Mr Roebuck), is a butcher and farmer, residing at Wadworth. The present action was brought to recover £23, 19s. for damage sustained through the breach of a warranty under which plaintiff had bought a brown mare of the defendant, and which warranty was given by the defendant. It seemed that on the 27th of February last, Mr Turner went to Wadworth, where he saw Mr Roebuck, who had informed him that he (Mr Roebuck) had a brown mare to sell. The plaintiff went to see the mare, and after some examination of her, he bought her of the defendant for 40 guineas, which was the price he asked for her. At the same time he received a written warranty of her soundness from Mr Roebuck, to the following effect:—"Wadworth, May 27, 1861. Sold to Mr S. E. Turner, a brown mare, rising 5 years old, which I warrant perfectly sound and free from all vice. Robert Roebuck." On the day after this purchase, the plaintiff went again to Wadworth for the purpose of paying the defendant for the mare, and also fetching her away. A short time after her removal to the plaintiff's stable at Tickhill it was observed both by Mr Turner and his groom, that the mare was continually putting one foot forward for the purpose of resting it, and continuing to do this for two or three days, Mr Turner acquainted the defendant of the fact. The defendant then stated that the mare had been ridden hard, and hunted on the day before he sold her, and that she had also been bady shod. Knowing the defendant to be a respectable man, Mr Turner naturally thought this a fair and legitimate reason, and that the symptom of resting her foot might be attributed to that cause, and therefore little notice was taken of it, the plaintiff being willing to rest upon his warranty, believing that ultimately all would turn out right. On the 11th of March, the plaintiff went to Mr Foljambe's of Osberton, that gentleman being at the time in want of a horse, and the result of that visit was that Mr Turner was to lend Mr Foljambe this mare for his own riding. The mare was forthwith sent to Osberton, and it was used by Mr Foljambe for about five weeks, during which time it was noticed by both Mr Foljambe and his grooms that the mare was continually pointing its foot and resting it in the same manner as previously observed by the plaintiff and his groom. At the end of that time the mare was returned to Mr Turner, and then it was he found that the mare was positively lame, and on the 7th of May, he had her examined by an eminent veterinary surgeon, Mr Taylor of Nottingham. That gentleman confirmed the plaintiff in his opinion of the mare's unsoundness—that she had a degree of malformation in one of her fore-feet, which was the result of an unsoundness of the hoof, which had been going on for some time, and it was his

opinion that she was unsound at the time she was sold by the defendant. The mare was subsequently examined (yesterday morning) by Professor Spooner of London, and he also pronounced the horse unsound, and gave it as his opinion that it was so at the time of sale. Before Professor Spooner's examination, the mare had been offered to Mr Roebuck, who would not receive it back again, and therefore it was sold, and Mr Roebuck bought her for 22 guineas, and it is now in his possession. After stating these facts, Mr Whitfield for a moment drew the attention of the jury to what was the legal bearing of unsoundness, pointing out that if at the time of sale this mare had any disease or disorder about it which would at all interfere with her work and usefulness at that time, she was in point of law unsound, and such being the case his client was entitled to their verdict. Therefore, the question they would have to consider would be, Had the mare at the time of sale any disorder or disease? and of this he thought he should be able to fully satisfy them.

Mr Whitfield then called a number of witnesses, including the plaintiff and his groom, two grooms from Osberton, Mr Angus, of Plumptree Farm, and the blacksmith who shod her, all of whom spoke to the mare going "feelingly," "groggily," and stepping short—all indications of unsoundness.

Mr Charles Taylor, sen., of Nottingham, said—I am a veterinary surgeon, and I examined the mare on the 7th May last, and found her unsound. She went lame with both feet at that time. There was chronic inflammation in the off fore foot, and the inflammation must have existed for months.

His Honour—What is the inference to be drawn from the difference in the size of the feet?

Mr Taylor—From want of action in the off foot.

His Honour—When did you last see the mare?

Mr Taylor—This morning, and I could not pass her as a sound mare to-day.

To Mr Whitfield—The resting of the foot is an indication of pain, also the "feeling" movement.

To Mr Smith—In my judgment the inflammation had continued for a long time, from the fact of one foot being smaller than the other.

To Mr Whitfield—The inflammation might be removed to a considerable extent.

Professor Spooner said, that he was Principal of the Veterinary College in London, and had been connected with that institution for upwards of 33 years. He had examined the mare in dispute this morning, and in his opinion she was unsound. He found that she went short in her fore action; he could not say that this was decided lameness, but it was an imperfect action, indicating to him that the mare had been habitually lame for some considerable time. With regard to her fore-feet he noticed that both were diseased—the horn of the hoof being very hard and brittle, and chipped near the punctures through which the shoe nails passed, instead of being tough and yielding, as it would be in its sound and healthy state. This was particularly the case with the off foot—one foot was a little larger than the other. This, in his opinion, was a morbid state of the hoof, and calculated to interfere with the usefulness of the animal. The resting of the foot and other symptoms which had been described by the plaintiff and other witnesses, were evidences of the mare's unsoundness. From what he had seen that morning, and from what he had heard in court, it was his opinion that the diseased state of the horse's feet was of long standing—was in fact constitutional and hereditary. It had certainly existed at the time of sale. He had also examined the shoes which had been taken off the horse's hoof, and now produced. He considered them very badly constructed for the mare's feet, and calculated to excite the symptoms he had described. There were eight nails in each shoe, which he considered more than necessary, and he might state that half the evils of shoeing arose from too many nails being used in their appliance. In his opinion it was not chronic inflammation of the navicular joint that the mare was suffering from, but a diseased state of the hoof, which was hard and brittle, instead of being tough and yielding.

This being the case for the plaintiff,

Mr Smith addressed the jury on the part of the defendant, his ground of defence being that the mare was perfectly sound at the time his client sold him to the plaintiff, but that when she returned from Osberton she had a corn upon each foot, which rendered her slightly lame, but at the present moment she was again perfectly sound. He called the defendant and several witnesses to prove the condition of this mare's antecedents to the time of her being sold to the plaintiff. It seems she was originally bought by a person named Lamb for L.11, and sold by him to the defendant at Bawtry Spring fair in 1860, for L.15. That she was then as sound as the best horse in England, and was free from all lameness or unsoundness whatever. As to her state after the sale, Mr Smith called several veterinary surgeons who had examined her, and, as contrasted with Professor Spooner's evidence for the plaintiff, we may give that of

Mr B. Cartledge, who said he was a veterinary surgeon, practising at Sheffield, one of the board of examiners for the Edinburgh College, and veterinary surgeon to the 1st West Yorkshire Yeomanry Cavalry. He had examined the mare on the 15th of May, and found her perfectly free from lameness. She had a corn in each of her fore-feet, and in his judgment those corns had been produced by bad shoeing. They were of recent standing—possibly some weeks, but not so far back as the 27th of February. He examined her again last Thursday, and he then found that the corns had entirely disappeared. Both her fore-feet were of the same size precisely. He had examined her a third time this morning, and in his judgment she was perfectly sound and free from lameness of any kind. A corn might be produced in forty-eight hours, or perhaps in less time; tight shoeing would produce a corn very quickly. She had been subjected this morning to a very severe examination, and certainly if she had any symptoms of lameness about her they must have shown themselves. The mare's action, in his judgment, was perfectly natural and perfectly even. There was nothing in the appearance of this horse which would lead him to the inference that she had ever been lame, and there was certainly no appearance of unsoundness. He could not say that she was sound on the 27th February, as she might at that time have been suffering from some temporary lameness, the effects of which might now have entirely disappeared. What he meant to say was that her present appearance bore no indication of her having suffered from any chronic disorder. He did not agree with Professor Spooner in stating the brittleness of the mare's hoofs to be hereditary and constitutional; or in this case in looking upon it as a cause of unsoundness. She certainly had somewhat brittle hoofs, but not to cause those results spoken of by Professor Spooner.

Mr Lawson, veterinary surgeon, of Manchester; Mr Edward Coulman Day, veterinary surgeon, of Leeds; and Mr Mather, veterinary surgeon, of Doncaster, were then called, and all corroborated Mr Cartledge's view of the matter.

Mr Whitfield then replied upon the evidence adduced by Mr Smith, and in doing so pointed out the fact that whilst all the medical witnesses on the part of the defence had spoken to the present soundness of the mare, and the total absence of indications of her ever having been unsound, yet not one of them had ventured to deny, but had all admitted, that she might at the time of her purchase by the plaintiff have been unsound from some temporary cause or other. Thus the case resolved itself into a nutshell, as it were. He had told them that in a legal point of view if the mare was unsound at the time she was warranted, that however sound she might afterwards become, the fact of her being unsound at the time of purchase was sufficient to justify an action for breach of warranty. That this was so in the present case must be apparent to them all, and therefore he hoped they would award his client that fair and reasonable amount of compensation to which he was entitled.

His Honour then briefly summed up the whole case, dwelling upon the conflicting evidence given by the medical men who had been called, and pointing out the fact that the three boys, who, defendant had stated, groomed his horses, and who could have spoken to the question of this mare's lameness, had not been called.

The jury, after a few minutes consultation, returned a verdict for the defendant.

Mr Smith applied for certain costs, which were allowed.

Mr Whitfield then stated that the verdict of the jury was so contrary to the evidence adduced that he was induced to ask his Honour to grant them a new trial.

His Honour replied that it was quite impossible for him to say whether the jury, upon the evidence, had come to a just or erroneous conclusion. They had had a great deal of conflicting testimony to deal with; he must refuse the application.

MEETING OF A SOCIETY.

RYE FARMERS' CLUB.

THE BEST SUBSTITUTE FOR ROOTS AND HAY IN FEEDING OR GRAZING CATTLE, WHEN BOTH THESE CROPS ARE DEFICIENT.

At the quarterly meeting of this club, Mr Horne read a paper on the above subject. He said:—I deem it prudent in the outset to state that it is not entirely on my own knowledge, or experience, that I mean to address you, but I shall also combine the communications of respectable and intelligent agriculturists, who have made agriculture their particular study, and in place of amusing us with opinions and theories, are able, and have shown themselves willing, to bring forward facts, which, under the sanction of experience, can be safely adopted in practice. To the intelligence and perseverance of some few agriculturists we are indebted for better systems, founded on experiment and attentive observation—a channel alone from which just ideas can be acquired, either from the subject under discussion, or any other subject in connexion with agriculture—therefore, of late years, many speculative opinions with which we were amused, have given way to the simple and unerring truth taught in the field or homestead; and, though much remains to be done, still, if we hold by experience, we have the satisfaction of knowing that the path hitherto trodden is solid ground, and we are enabled to look forward with confidence to a period, not far distant, when our system of feeding and fattening cattle will be much more perfect. This, however, is not to be accomplished by any fanciful opinions, however plausible, but by details of successful practice, and in all cases having an example ready at home, to illustrate our precepts; for converts amongst intelligent farmers are not to be gained by theories or opinions. We must have data to go by to convince before we convert; that being within our power, as most of the important points connected with agriculture, admit of being illustrated by experiment. Were this system pursued—were men only to relate facts and communicate their discoveries in the language of truth and plain sense, agriculture would soon assume a more perfect form; pride, prejudice, and error would succumb to facts and figures, and the progress towards perfection would be more certain and uniform. One thing, gentlemen, I deem it necessary to mention. Many farmers, like myself, from a diffidence in themselves, withhold their observations from the public, from an apprehension that their style and manner of writing are deficient; in this way many facts and observations highly interesting to society are entirely lost. To such I will repeat the advice given me once by one of the most eminent writers on agriculture of the present day, as follows:—"State the result of your experiments in the language of common sense; one fact so stated is superior to a thousand arguments, however plausible." With this maxim before me, I have summoned courage to my assistance while attempting to address you, trusting that you will consider composition and pronunciation of secondary importance to the facts that may be related. So much for the preamble, now for the practice. When I undertook to introduce the subject fixed for this evening's discussion, it being one of such importance to agriculturists, I was aware that my own experience alone was not sufficient data for your future guidance. I therefore made some inquiries among my agricultural friends, in different districts, where I was aware that different systems were adopted, and before alluding to any systems that have been conducted under my

own superintendence, I shall first give you the benefit of these inquiries; I shall next take the results of my own experience, and then conclude with what, in my estimation, are the most economical substances to be used, in conjunction with a limited supply of roots and hay, for keeping store cattle in growing condition, and in fattening, or preparing grazing cattle for the butcher. The most elaborate of these replies is from Mr Coleman, Woburn, which I regret time will not permit me to give in full. The system of using prepared food has long been adopted for feeding cattle at the "Park Farm." Mr Coleman writes thus:—"Your question I am quite unable to answer, as, under all circumstances, it is impossible to say what is the best substitute for roots. But I suppose your friends want to find out how to keep cattle both for store and feeding purposes, without so great a consumption of artificial food as has this year been employed, to make up for the bad quality and short supply of roots and hay of last season. The article which I think may be made much more use of than at present is *straw*. Of this but few farmers know the real value; and were more care taken in the harvesting and preparing of it for our cattle, it would play a much more important part in the economic feeding of stock than it does at the present moment; any description of straw I consider to be of little value when given in its long or natural state; it must be cut and mixed up with hay, roots, meal, &c., to make it palatable, and when so treated goes a long way to supply the deficiency so much complained of this season, viz., a short root and bad hay crop." In describing the system of preparing food, Mr Coleman writes:—"I will now detail, for the benefit of your friends, the plan I pursue now, and which I think is one that enables me to keep one-third more stock than on the dry, or Norfolk system. The corn or meal I use is ground and then boiled; the chaff is placed in layers of about six inches in thickness, in large cisterns; upon this chaff a thin coating of pulped or cut roots is spread, and upon the roots a portion of the boiling mucilage is poured, to which, after being slightly mixed, is added more chaff, roots, and mucilage, until the cistern is quite full. It is then left for 24 hours, in which time fermentation takes place; and with three parts of straw, and one of inferior hay, 1 lb. of linseed meal, half-a-bushel of roots per head per diem, I have had 80 head of store cattle all winter, that have kept in good condition, thriven, and done well. With fatting cattle the proportion of hay is greater, and I generally commence with 4 lbs. of meal or cake, and gradually increase to 8 lbs., which quantity I rarely, if ever, exceed. My mixture usually consists of 1 lb. linseed to 4 lbs. of barley, lentils, or other corn meal; it boils down, and makes a much better mucilage. Upon 120 acres of roots, 100 of upland hay, 80 of pasture hay, I never had less than 250 head of cattle all winter; 80 fat ones sold at Christmas, and I shall get rid of 80 more before this month is up: 80 store cattle, &c., and over 1,000 sheep, I hesitate not to say, had it not been for the consumption of straw, I could not have kept much more than half the number. As to feeding stuffs, linseed-cake holds the highest place. Cotton seed-cake is much used in this neighbourhood. I prefer it when things are at grass, or receiving large quantities of roots. Most of the meal, I find, answers better when mixed with linseed meal, than when used alone." Mr Lilliw writes me as follows:—"My practice for the last six years has been to use the pulper, and mix with straw, chaff, &c. The first year I fermented the mixture. Cattle are very fond of it, and it is very wholesome, but it is so difficult to keep in proper state that I have abandoned it: for example, every change of weather has its effect. In frosty weather it will take four days or more, and I have found it fail altogether; in fine weather, I have had it quite hot in 24 hours. My allowance of roots is 56 to 70 lbs. per day, for 100 *store* beasts, mixed with sufficient chaff to serve as fodder, and mix it to lay 24 hours. I have found no artificial food to beat good linseed cake. Prices are so nearly on a par, generally, between cake and other feeding stuffs, that I have seldom been inclined to give it up, even on the score of economy. I never give cake until the last two months, beginning with 3 lbs., and finishing with 6 lbs. To store cattle I never give cake; they do exceedingly well on the mixture, and keep much more healthy than on roots and straw separately. There is no doubt but by the system of preparing food for cattle, many of the most valuable ingredients are greatly economised; on the

other hand, the cost of attendance is nearly, if not quite, double, what it is on the old system of feeding on roots and fodder alternately. But I am satisfied that all this is saved on roots alone; thus, as it were, converting labour into food. A good thing for young store cattle is molasses, liquified in warm water, and sprinkled over the heap; they will eat it with avidity." I shall only give you one more of these communications. In writing to Mr M'Culloch, he sends me his published experiments (embracing 63 cattle and 21 lots), fed on auxiliary food in conjunction with roots, at Logan Main, and conducted for two seasons They are the most comprehensive and complete that have yet been laid before the public. As they are already before the public, I shall only read you Mr M'Culloch's conclusions: "The two facts of greatest practical value brought out by these experiments, are the superiority of cooked over uncooked food as an auxiliary to roots. By merely boiling the same quantity of bean meal (4 lbs.) instead of giving it raw, an equal result is produced by 71 cwt. of mangolds as by 84 cwt., and with swedes the cooking of the auxiliary bean meal makes a saving over the raw meal of 27 cwt. swedes; or, to put the value of the cooked food in another light, it appears that an ox fed on turnips alone consumed daily 150 lbs. swedes, while one with 4 lbs. raw bean meal consumed daily 130 lbs. swedes, and another with 4 lbs. bean meal cooked consumed daily 100 lbs. swedes, the 4 lb. raw bean meal being an equivalent to 20 lbs. of turnips; whilst by merely cooking it, it became equal to 50 lbs. turnips. So simple a process must recommend itself, by the above surprising and satisfactory results, to every feeder of live stock." Having thus given you the experience of others in different districts, I shall now explain to you the system we adopt in feeding cattle in our own establishment; but before doing so, allow me to bring under your notice some experiments we have conducted, in order to find the most economical food in conjunction with roots and hay. These experiments have recently been given to the public in the Highland Society's Journal, therefore I shall only state the results. Six bullocks that bred upon the farm were equally divided into single boxes. They were supplied with cut roots, the first month swedes, the second swedes and mangolds mixed, latterly mangolds; in addition, they had 6 lbs. rough or low meadow hay cut into chaff, and 5 lbs. oilcake, or value to that amount. They were divided into three lots of two each: lot 1 had 5 lbs. oilcake each bullock, lot 2 barley and wheat meal to the same value, and lot 3 bruised linseed. The oilcake cost L.10, 10s., barley and wheat meal L.8, 15s., and the bruised linseed L.13 per ton. The experiment lasted four months, or 112 days; each bullock was weighed before putting up, and every successive month. It was found that the increase at the end was as follows—

Lot 1. Oilcake gained live weight 637 lbs.
Lot 2. Wheat and barley meal do. 639 lbs.
Lot 3. Bruised linseed do. 718 lbs.

It is thus shown that linseed gave most weight for value consumed, and oilcake the least. As already stated, the experiment was continued for 112 days: we therefore find that each bullock, during the time consumed 5 cwt. oilcake, or value to that amount, 6 cwt. hay chaff, and 90 cwt. of roots. It is found that the average increase was 337 lbs. each live weight, which is equal to 16 stones (14 lbs.) dead. The feeding statistics will stand as follows:—

5 cwt. oilcake at L.10, 10s.	L.2	12	6
6 cwt. low meadow hay, at 60s. per ton	0	18	0
16 weeks' attendance at 6d. per week	0	8	0
	L.3	18	6
16 stones of beef gained, at 8s. per stone	6	8	0
	L.2	9	6

thus leaving us 49s. 6d. for 90 cwt. of roots consumed, or 11s. per ton. I have been rather prolix in describing this experiment, because it is the opinion of several present that bullocks never pay for food consumed. Our friend Mr Mechi, tells us in that crude book of his entitled *How to Farm Profitably*,

"Most bullocks are ungrateful fellows, and that those who fat many will not require any will;" and he goes on to tell us how he had twenty acres of beautiful roots, for which he could realise L.10 per acre, to be carted off the ground, but after carting, cutting, and handing them to the bullock, in place of his L.200 profit as anticipated, when the cake and corn bill was deducted, he had only the pleasure of *finding the brutes were* all buried in manure, a valuable dung-heap! Now, let us see how our northern friends manage their roots, and how they feed. Mr McCombie, Lillyfour, writes me from Aberdeen in answer to my inquiries: "I fat from three to four hundred beasts annually—my average price for them in London this season has been L.35 a-head. I never exceed 4 lbs. oil-cake and 2 lbs. bruised oats a-beast per day; they have what turnips they can consume, and oat straw *ad libitum*. L.12 per acre is my average profit in feeding on Aberdeen yellow and Swedish turnips. I sometimes realise less—often more; but the above is my average." Now, gentlemen, wherein lies this great difference between the feeding statistics of this cannie Aberdonian and the worthy Alderman? It may be surmised that northern roots are more nutritious; but I am inclined to think there may be another difference. To my knowledge our northern friend is a shrewd judge of lean stock; he only selects those likely to pay for food consumed. I have no means of knowing how the alderman selects the animals he means to fat; but, judging from the specimens I observed when I had the privilege of looking over his farm, they were not the best adapted for converting food into beef to supply the million. Therefore I am inclined to think it was *not* the food which made the difference; it was the beasts which consumed it. I have no doubt, gentlemen, it is often the selection of our lean stock which makes the grazing box pinch us. On referring to Mr Lawrence's (Circencester) *Handy Book* we find he realises a profit, after charging 10s. per ton for his roots, which talies pretty well with our own experiment; and if we calculate Mr McCombie's turnips at 25 tons per acre, which we are justified in doing, it will appear that properly selected and judiciously fed bullocks will leave some 10s. to 11s. per ton for roots consumed, which is contrary to the opinion of many members present. We have thus shown how roots may be profitably consumed, even with bullocks, if we could manage to raise them successfully; but in this we have to contend against the variations of seasons, in regard to rain and temperature, in which we have found the effect during that ever-to-be-remembered season—1860. On our farm we grow annually some 40 to 50 acres of swede and mangold, to be drawn to the homestead for consumption. Last season we were some 15 tons an acre short of the crop of 1859. With the same number of stock on hand, and some 500 to 600 tons of roots short, our brains were a little taxed as to how we should get over the winter. However, we adopted the mixing system, and derived a great advantage therefrom. The dry food we cut into chaff, and mixed with a limited quantity of roots; our artificial food, principally linseed, we mixed with damp chaff; for our dairy cows we used bean-meal, mixed in the damp chaff. In short, our feed was all mixture; and I can now with confidence recommend it to the members of this club, for our beasts did equally well with one-third less roots, and we had no symptoms of that detestable scouring which is sure to follow injudicious meals of neat roots. I shall now state what I have found to be the most economical artificial food in conjunction with a limited quantity of roots and hay. For all beasts fatting I would use bruised linseed and bean-meal in equal proportions, mixed with damped chaff; *four times a-day*—hay chaff and corn, morning and mid-day, with chaff and roots intervening. If hay is limited, use straw-chaff in the roots. When roots are short, for store beasts I would recommend 1 lb. linseed, mixed in damp chaff, and 2 to 3 lbs. cotton-cake. For dairy cows I would recommend 1lb. linseed, and 2 to 3 lbs. bean-meal—if cooked, all the better. In this branch I would strongly recommend liberality, as it is "from the mouth the cream comes." I have refrained from any detail on steaming, or pulping, as yet we have not adopted that system in our establishment. I have read to you the communications kindly sent by those parties by whom it is practised; and on well-arranged establishments, I have no doubt, it is satisfactory. However, the mixing system may be adopted

by all who use Gardner's cutter, and one chaff-cutting machine. One system I cannot too strongly bring under your notice: it is that described by Mr M'Culloch: "I adopted the system one season in fatting some fourscore beasts, and I never had animals do better. It may be adopted by every one that has a copper. To every quart of water, when boiling, put 1lb. bean-meal, well-stirred. The fire is then withdrawn, and the jelly can be mixed with any quantity of linseed-meal, &c., or chaff meant to be used. If given to the animals while warm, they will eat it with avidity. Any other artificial food may be used in conjunction with the bean-meal, but that should be the standard for cooking." According to Mr M'Culloch's experiments, 4 lbs. of bean-meal, when cooked, became equal, (in conjunction with a fair quantity) to 50 lbs. roots. I shall leave it with you, gentlemen, to decide which can be raised the cheapest. I shall only just advert to the artificial food we now find in the market. Oilcake (like guano in the manure) is, and will be, the standard, most especially for fattening things. Rapecake is no favourite of mine, unless in conjunction with more palatable food. It is not eaten with relish. Cotton-seed cake I can highly recommend for store-beasts or sheep; but it is inferior for fattening. In some of my experiments in fattening, it stood very low; but in using it for store cattle, I found they did remarkably well upon it, and all stock are fond of it. It being but recently introduced, I wrote to Mr Laver, concerning its chemical properties. He kindly wrote me as follows: "The decorticated cotton-seed cake has not yet received the attention amongst farmers it deserves. For certain purposes it is most valuable, and store-beasts will do better upon it than upon the same weight of linseed cake. The manure is more valuable than that from any other substance. Good decorticated cake should be of a bright yellow colour with little or no husk in it. It should appear oily, and without any acrid taste." There are many more substances, but I can only recommend those I have found to answer my purpose. I conclude with an allusion to the vexed question of manure, where our friend the Alderman buried his L.200 value of beautiful roots, and on that I must refer you to Mr Lawe's valuable published tables, on the value of manure made from different substances, into which time will not permit me to enter. I shall only draw your attention to one item. In the experiment recorded to you, as conducted at our homestead, it was shown that barley and wheat-meal, at one given price, produced more beef than oil-cake did. But in referring to Mr Lawes' tables it will be seen that manure produced from a ton of the said meal is only valued at 31s., while that produced from oil-cake is put down at 92s., thus giving us 61s. more value in manure from oil-cake, when the beef realised was nearly on a par. So much for facts and figures, for our future guidance.—*Mark Lane Express.*

PERISCOPE.

STARVATION IN ANIMALS.

(From the Scottish Farmer and Horticulturist, July 3, 1861.)

THERE are two periods of an animal's lifetime, and particularly with regard to the horse, at which some persons do not think it necessary to devote that care essential to ensure vigorous health. Young and old are far more mercilessly treated than the robust animal at the right age for great exertion and prolonged endurance. We are, of course, alluding to occasional instances which must be classed amongst the many flagrant abuses of the right of proprietorship which we exert over the dumb creatures.

We can point to several circumstances under which starvation is a prevalent ill which befalls our domestic quadrupeds; and we can specially draw the attention of the Society for the Prevention of Cruelty to Animals to one amongst many habitual practices which result in deaths from cold and want of food. We wish to devote a few words to the ill-used ass.

Our observations apply more to the county of Middlesex than to Mid-Lothian; but in various parts of the United Kingdom at this season of the year, a large

number of donkies and ponies of every description are employed for the salutary enjoyment of children—big and little. A donkey gallop and a horse-race are excellent accompaniments to sea-bathing, or the boisterous amusements of fair days and holidays. Can there be a more ruthless hand with the stick than many a delicate daughter of old Albion with a crinoline which covers from ear to tail the near side of a poor little animal, on whose off-flank and quarters palpable marks of the lash are to be seen during the whole period of the "sunny season?" But however hardly used, nature is bountiful to these poor animals which, when often turned adrift during the night-time, can fill their stomachs with a sufficient amount of good grass. As the trade is good and animals scarce, some extra cash is bestowed on material to be expended in the gallops, and a few feeds of oats and some good hay may delight the palate and invigorate the frame of the infirm solipedes, which are not usually handicapped according to size and performances in their irregular exploits on the turf. The winter season comes on and their grimy owners can get little, either honestly or otherwise, by plying their trade, and the donkeys are turned adrift on some public common. Should the pangs of hunger seize the master, his abused servant may be exchanged for a few shillings whence he will never issue—viz., at the veterinary college; but most frequently this transfer from the heath to the dissecting table occurs when there is tolerable evidence that the animal cannot gather sufficient food and its owner's exchequer is at the lowest ebb. Sticks, filth, mould, or any material substance may be swallowed by the poor donkey to appease hunger, but, notwithstanding a thick furry coat which nature has granted him, cold and rain, wind and snow, tell on his reduced frame, and he sinks emaciated and dies. Few having ever seen a dead donkey, may doubt the end here alluded to; but if life is prolonged over a few winters, the hardy little animals have the constant change from ill-usage and a fair proportion of food in summer, to hunger and starvation in winter. We have seen such donkeys die tetanic, and fall exhausted without chance of restoration, though abundance was offered them, but too late.

Occasionally, a severe winter, such as the one of 1860, produces a very general loss amongst animals from cold and starvation. The latter should be provided against, even in the most hopeful years, by an adequate supply of artificial food. Ewes, clambering over deep snow, and gathering just as much as prevented death, when the lambing season arrived were delivered of puny creatures, which dropped helpless to the ground, and, if sufficiently vigorous to grasp the teat, sucked in vain, as the udder yielded no milk.

It is yet possible to meet with some old miserly farmer who breeds a horse or two, to be spared the trouble and expense of buying stock to work the land with. He manages this matter according to his sordid notions of economy, and some old mare, perhaps, disabled from work breeds him a colt. The two are condemned to pass several months on some wretched land, the most luxuriant plants in which are often but a few thistles scattered about. The mare during the summer months, and when her colt is suckling, may yield a fair quantity of milk for its sustenance, but as winter approaches, and there is no extra allowance, both are reduced to skin and bone. The old mare perhaps becomes dropsical, her blood flows too languidly to keep up a healthy nutrition, and the foal is soon seen to be ricketty. Its hocks swell, its belly droops—not from quantity of food, but from disease—its muscles waste, and unless some unusually skilful hand happens to see the young animal, all hopes of recovery soon disappear. This is no fancied description. We witnessed a very remarkable case of this kind not long since, in that most fertile and wealthy county—Haddingtonshire.

CONDIMENTS FOR CATTLE.

(From the same.)

The idea that prejudices are sins in relation to improvements, and that in this enlightened age we must all follow in the wake of discoveries in order to reap the fruits of knowledge, must be regarded as admitting of considerable qualification. It may perhaps be thought south of the Tweed that words of *caution* are not

needed for the Scottish farmer, but there are many enterprising agriculturists who experiment here more, perhaps, than in many other parts of the United Kingdom. It is the duty of all who can suggest any means of avoiding unnecessary loss, however limited, to speak as plainly as they can.

Without danger of being too dogmatic, we can assert, on the subject of foods and feeding cattle, that the value of the richest materials our fertile fields will yield being known, as it well is, to the intelligent farmer, there are no means to be suggested of mixing or medicating which can increase their nutritive value much. Beyond the farm processes of crushing, cutting, boiling, pulping, &c., no admixture of mysterious drugs or spices can enhance the meat-producing virtues of food. When we see a host of material advertised, at a cost of thousands annually, which enrich their "discoverers" and prove heavy sources of profit to numerous agents—the price of the article being five or ten times higher than that of the best and soundest food grown by a British farmer—the advertisements and caterers for orders should be disregarded, and home produce be relied on.

If material cheaper than all other yet known can be produced, and which proves far more fattening than any the farmer has at hand, he may then put his hands in his pocket, but he must be satisfied that the *cheapest* is the *best*. When, however, a very large price is asked, and a price beyond that which could be procured for an undisguised substance, the presumption is, and indeed it is matter of certainty, that there is not a corresponding advantage in proportion to outlay.

It is the *mystery* of the mixture, and not its *unequalled* richness, that the honest farmer is made to pay for. A renowned quack in the veterinary line began to advertise a certain "British Remedy" for the cure and total removal of ringbones, of splints, spavins, and all other deformities regarded as permanent eyesores and manifest unsoundnesses. He had simply changed the name for the violent "black oils" of the old farriers; and the old mixture, under the cloak of a new name, realized at the rate of a thousand per cent. But the blemishes which resulted from its application interfered with its unlimited success. All quack products should have at least the recommendation of not killing, if they can't cure.

In the cattle foods advertised there is mystery as to the ingredients, but none as to their essential nature. We can go the length of admitting that they contain a large proportion of flesh and fat forming elements, and we are led to understand that they contain spices, sweet savory principles—in fact, drugs which stimulate digestion and ensure that the large quantity of nutritive material is thoroughly assimilated. It is this spice which many have paid L.20 or L.30 the half-hundredweight for, because that quantity would be large in a ton of any mixture to be used as food. We allow from ten to fifteen pounds for the nutritive material itself, which, we need scarcely say, would realise much profit. Fœnugreek at the rate of ten shillings a pound!

It is marvellous how easily many are deceived. Some of our able agricultural chemists have proved the absence of any extraordinary or even fair nutritive value in the foods; but we wish to point to the absolute injury of the condiments employed.

When a young and robust man acquires a dangerous taste for much cayenne or certain sauces, he cannot indulge his artificial appetite without becoming dyspeptic. He must increase the quantity of stimulating principles in order that the stomach may act. It has lost that delicate sensibility which once caused an ample flow of a digesting fluid whenever food was swallowed. It is the same with animals. If they are in health, no medicine can be needed, and the simplest drug may prove a deadly poison.

Common salt affords us an instance of one of the simplest medicaments which, even in moderate doses, may prove injurious. Professor Delafond has shown this. If cattle are thriving fast on rich food, and the latter is sprinkled abundantly with salt, digestion is increased in activity at once, and a fatal plethora is not unfrequently the result. The aromatics employed can only produce an artificial

activity of the stomach, and the latter, being accustomed to the stimulus, is soon unaffected by it, the animal at best being not much the worse for the useless material, which some would have us believe increases the nutritive properties of food.

Not to be too severe, we may repeat Professor Voelcker's advice—we "recommend all parties to use only such articles *as they really know the value of*, or what will bear the test of examination; for while such preparations as those to which we refer do possess a certain amount of value, it has not hitherto been at all equivalent to the cost."

Annales de Médecine Vétérinaire. October to December, 1860.

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XIX.—Cod-Liver Oil as a Rubefacient. By M. J. B. Dessart, Government Veterinarian at Zenappe.

Oleum morrhuæ has been hitherto favourably known, alike by medical and veterinary practitioners, as an efficient tonic, more especially in cases of scrofulous affections. Its administration, accordingly, has been exclusively internally, or if applied externally, it has only been with the intention of producing its constitutional effects, in cases wherein the stomach was too irritable to retain it. M. Dessart advocates a novel employment of this agent. He says: "I do not hesitate to declare that this agent is one of the best resolvents we possess in veterinary medicine, and that it is capable of rendering substantial service as a revulsive agent in extensive inflammation of the visceral cavities. It will gain by comparison with the more common rubefacients of our schools. Its application is simple and easy, and it requires no preparation." The agent penetrates the skin so readily that the removal of the hair is unnecessary, in order to the production of its effects. In some instances, however, it is necessary to brush or curry the part to which it is applied; and whenever an active revulsive action is wanted, it is advisable to heat the parts before and after the application. The agent should be rubbed in with the hand for five minutes at a time, and according to the effect desired, this should be repeated twice or thrice a-day. In the latter case considerable pain, tumefaction, and blistering, generally takes place by the third day, and the subsequent discharge is copious. It is said to produce a deep-seated irritation without leading to disorganisation of the tissues, and, consequently, without any tendency to blemish; its local effects soon pass; several applications generally produce the desired result, and it frequently succeeds in curing morbid conditions that have resisted the best of our ordinary counter-irritants.

Two cases are recorded of the employment of this agent. The first is that of a three-year-old filly, which, in consequence of a fall, had sustained a dislocation of the shoulder-joint. Reduction of this was effected, and the lameness greatly relieved. Ammoniacal frictions were employed for ten days, during which the lameness had so much increased that perfect recovery was despaired of. In this extremity cod-liver oil was resorted to, and six applications led to an extensive irritation and engorgement of the skin, which, gradually subsiding, left the patient completely cured. The second case relates to a two-year-old filly, with an obstinate hip-joint lameness, in which other counter-irritants had proved useless; three applications of the oil, however, produced considerable irritation, and in eight days a complete cure was effected.

XX.—Nervous Affection in a Dog. Reported from Professor Delwart's Clinique, by M. Hucque, Fourth-Year's Student.

The subject of this notice, a spaniel, a year and a-half old, had shown some dulness and disinclination for food on the day previous to his being presented for advice. The owner noticing, in addition to the general symptoms, some signs of constipation, gave a dose of castor oil. This failing to act, and the animal seeming much worse, M. Delwart's advice was sought on the 24th October. At this time the symptoms were: general trembling, difficult and unsteady motion, the posterior extremities being especially faulty; the breathing hurried, and painful, with considerable lifting of the flanks; the head heavy, depressed, and

turned to the left side; the conjunctiva on the same side injected, both eyes being nearly closed; the creature seems deaf even to the call of its master, and presents a general insensibility, indicative of a serious affection of the nervous centres.

Cerebral congestion having been diagnosed, a large bleeding was practised from the saphena vein. The blood was black, tarry, and very coagulable. A purgative, containing two drachms each, of jalap and aloes, was given in water, and cold-water affusions employed upon the head. A slight amelioration seemed at first to take place, but soon the symptoms became aggravated, and complete paralysis and coldness of the posterior extremities ensued. The day following there was observed, in addition to the above symptoms, an extreme irritability of the skin, so that the patient uttered the most piercing cries on being touched. As no fæces had been passed, six grains of calomel were now administered. About four hours later spasmodic action of the muscles of the head were observed. The head was raised, and allowed to fall heavily to the ground; there was spasmodic action of the jaws, and the animal chewed its litter. The number of respirations was 88 per minute, and the extreme sensibility was retained. The patient died next morning at 7 A.M., and was examined three hours after death. The stomach was filled with the masticated straw; the intestines showed some patches of inflammation, readily attributable to the medicines administered. The other abdominal organs were healthy. Some stagnation of blood in the right lobe of the lung was accounted for by the pressure of the heart when in the recumbent position. The brain and spinal cord were healthy, so far as the unaided eye was capable of judging.

The malady is supposed to resemble stomach staggers in the horse, the morbid condition having commenced in the sympathetic system of nerves, leading to the morbid appetite and constipation, the involving of the posterior part of the spinal cord sympathetically, led next to the paralysis of the hind extremities, while the subsequent implication of the cerebral and other portions of the nervous system induced the spasmodic actions, and the remarkable exaggeration of sensibility which characterized the last stages of the disorder.

It is possible, however, that microscopic examination might have revealed lesions in the cerebro-spinal system, sufficient to account for the latter phenomena.

XXI.—Hæmaturia cured by Urethrotomy. By MM. Martin and Guilmot, Veterinarians at Cinly and Havelange.

Four oxen on the same farm had been affected with the above malady for five weeks. In three of these there was no other unpleasant symptom beside the colour of the urine. In the fourth this condition was complicated with suppression of that excretion. Notwithstanding the most violent straining, only a few drops were passed in the course of eight days. To consult in this case, the above gentlemen were called. The former treatment had been depletion, with restricted diet, emollients, and nitre draughts. The driblets of urine passed, being very high-coloured, and its passage effected with extreme pain, and after severe straining, led to the supposition that its course was obstructed by the presence of clots in the urethra. It was accordingly advised to open this canal, and attempt the extraction of these agents. An incision having been made above the ischiatic notch, a probe was introduced, but its progress was soon arrested by a body blocking up the canal. The backward passage of this was favoured by gentle manipulation with the hand introduced into the rectum, and its exit was assisted by a pair of dissecting forceps. It proved to be a clot of blood, and its removal was followed by a copious flow of reddish-coloured urine, which was soon arrested by a second clot This was extracted as before, as were also a number of others, and the operations were only suspended when the urine flowed in a free stream, and when no appearance of further clots was discovered.

The animal was now supplied with farinaceous food containing nitre, was well rubbed down, covered with two woollen sheets, and had frequent emollient injections. A tonic and astringent treatment was afterwards pursued. No sutures were placed in the wound, yet granulation took place, healthily, the urine gradually assumed its proper course, and in the space of a month perfect cicatrisation had taken place.

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AND

Annals of Comparative Pathology.

ORIGINAL COMMUNICATIONS AND CASES.

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Lectures on the Principles and Practice of Shoeing, delivered in the New Veterinary College, Edinburgh. By JOSEPH GAMGEE, Sen.

LECTURE VI.—ON THE FOOT.

IN my last lecture I pointed out the necessity of taking into consideration the whole animal, in order to be able to understand the laws of action in the limbs. Continued work, observation, and experimenting, have more and more impressed on my mind the correctness of views I have long entertained. In support of my own convictions of the value of studying external conformation, I may adduce the opinion of the late William Percivall, expressed in his lectures, published nearly twenty years ago :—"Two questions will naturally arise in the mind here: one is, Can any rules of proportion be ascertained and laid down that will prove of service to us in practice?—the other, Supposing such rules can be framed with any prospect of practical advantage to us, upon what basis or determinate measures ought they to be founded? I will not offend the accomplished 'judge of horses,' by saying that he is likely to derive much benefit from the study of any rules of this kind, however accurate their character; but I will go so far as to give it as my opinion, that the student of veterinary medicine, or tyro in practice, might gain from attention to such rules that sort and amount of knowledge which would put him, in the course of a short time after his application of them to practice, into the possession of that knowledge which the 'judge' had only been able to arrive at either through extensive and manifold observation or a lengthened course of practice. In a word, the student or beginner in such matters would, I do not hesitate to affirm, gain much ground by making that a study, so far as he could do so, which his older professional brethren had obtained but through great opportunities of experience or years of attentive observation."

It is, however, in its application to the subjects of my present course—Prevention and Cure of Lameness—that I am led to invite attention to the study of structure and function, independently and

apart from the general application to which the lamented author just quoted made allusions, all of which have my concurrence.

Nothing but the cultivation of knowledge on the mechanism of the horse can lead to a right and common understanding of action. Anatomical investigations, if prosecuted preparatory to, and simultaneously with, observations on the living animal, will assuredly lead to increased knowledge, and to the exclusion of erroneous notions. We cannot learn the movements of the living horse by examining the structures of the dead subject alone. I at least have found it necessary to examine the structures in the dead, and the movements in the living horse, alternately, at intervals over a series of years, a process of study which has been attended with constant interest and instruction.

In studying action we master the subject better by observing all varieties of horses, from the foal with its dam to the adult horse, from the cart-horse and roadster to the race-horse in all his paces; we may, however, premise that the law of action is the same in each, though we observe some movements better in one class of horses than in another; an observant man learns as he runs, as he may see horses everywhere, though meeting them in the street, walking and trotting, encumbered as they generally are, is not the most likely aspect to lead to correct knowledge. Sir Charles Bell told us that he had not understood the structures of the human foot until he had examined that of a negro who had not worn shoes, neither could he have seen the movements of the foot and limb by observing the man whose feet had been enclosed in thick-soled, high shoes from his childhood, until his legs appeared scarcely able to carry his body.

On the perfect development of the horse's chest depends the right position of the fore-limb; the scapula is directly affected by the form of the chest; a narrow, flat-sided horse has, besides being constitutionally weak, the scapula placed to a disadvantage; with a flat shoulder the head of the humerus projects out, the elbow is turned in, and so all the bones to the last one in the foot, deviate from the natural line; hence imperfect action, defect of line of bearing, cutting, and other evil consequences result under exertion. The position of the hind-legs is to a less obvious extent affected in the same way, by imperfect development of the pelvic region.

When, under the mandate of his will, the horse starts into action, movement proceeds through the influence of muscular power exerted from the trunk on the limbs, and simultaneously through the action of a class of muscles, which have their origin on the upper bones of the limb, and through which, by means of their tendinous appendages inserted into the lower ones, directly and indirectly every bone is moved; the feet, in succession, becoming the fulcra on which power is exerted, locomotion results.

The feet are flexed, lifted, and extended before they alight on the ground, in which movement each bone, from above to the last in the foot, is brought into such relative position, that the weight is transmitted in a given direction according to the kind and velocity

of action. The first part of the foot which alights on the ground is the heel. In all progression, the posterior region, wholly or in part, according as the surface is even or uneven, on which the foot alights, first takes a bearing on the ground. The flexor muscles, acting at the instant, the line of bones from the foot upwards revolve, the plantar surface grasping the ground, forms the fulcrum on which their powers are exerted, alike in the cart-horse moving a load, and the swift courser in his most surprising speed. I alluded, in a former lecture, when speaking of the coronary bone, to its being endowed with most important functions in the economy of the foot. We observe that this and the pastern above are the only bones in the limb which sustain singly the weight of the animal. In studying this part, we are led to inquire why nature gave two bones instead of forming one only, seeing that the two pastern bones together are only from five to six inches in length. The reason is obvious. Each bone has its separate special functions; besides that in common to both, of sustaining the weight.

The coronary bone is endowed with movements in kind and extent such as lead me to regard it as the pivot on which the most important functions of the foot turn. This short, solid bone, is remarkable for the extent of its articulating surface. On its broad, upper head, it receives the condyles of the pastern bone; but it is at its lower articulation with the pedal and navicular bones where we observe its greatest extent of lubricated surface. The exterior of this bone, on the other hand, presents an aspect of roughness and depressions for the attachment of ligamentous structures over its almost entire surface.

In observing and contemplating the movements of a horse's limbs, we encounter special little difficulties; when we have made some advance in the knowledge of parts, and have examined structures and observed the movements, it requires much time, discourse, and demonstration, to describe the same; the parts in the living horse being to a great extent hidden, whilst every function is perfectly performed in an instant, and several times repeated in the small fraction of a minute.

On taking a view of the horse in action, and studying his movements, we pronounce his action to be good or bad for given purposes, and that too, often without understanding the laws which influence it, and yet from long and extensive practice the eye becomes so accustomed to good and defective movement that a correct judgment is often formed notwithstanding. Taking a side view of the horse, we observe the knees and hocks to be the joints where the whole motion centres; the two joints above, in both hind and fore limbs, are in close connection with the trunk; clothed with powerful muscles, they act with great leverage, whilst the feet no less, forming the fulcra on which the whole power is exerted, the pastern and cannon bones become the levers upwards, as the head of the cannon bone is carried out by the extension of the radius in the fore limb, and by the lifting action of the muscles and tendo Achillis, acting with augmented leverage on the os calcis in the hind one.

Returning to the consideration of structures and functions of the foot, I shall have to advert to some parts which I have not hitherto fully exposed to notice, and I shall not confine myself merely to structures contained within the hoof. All below the knee and hock directly comes within the sphere of our present inquiry; concentration of the superincumbent weight, its distribution and ultimate diffusion, which constitutes the harmony of parts, and affords ease of motion, requires that we should make ourselves acquainted with the laws that govern these functions.

I will now submit my views on the way that flexion of the feet is promoted, and the way in which progression results. Preliminary to the consideration of function, I must make further reference to structures.

The *suspensory ligament*, so called, is a broad ligament arising from the back and lower part of the knee and hock, and in both alike passes downwards to the fetlock, a little above which it divides into two branches, to be attached to the outer part of each sesamoid bone. It is the structure and function especially of this ligament that I have now to deal with. This substance has been described as endowed with considerable elasticity. "This descent and ascent of the sesamoids is not to be compared with that imperceptible and disputed motion of the splint-bones; on the contrary, it is a demonstrable and beautiful descending and ascending operation—a playing down and up, after the manner of a spring of most elastic and exquisite workmanship; imparting, at every step the horse takes, its anti-concussion influence to every part of his frame. The elastic band or ligament upon which the sesamoids repose in their descent, and depend for their re-ascent, is the *suspensory*."

In making the foregoing quotation from one of the works of the late William Percivall, whilst my views are different from those entertained by him on the suspensory ligament, I have particular reasons for quoting his authority, instead of that of any other writer, inasmuch as his works, more than any others, represent the state and progress of veterinary medicine during the thirty years, in which he was the chief contributor, both to the periodical and systematic literature, on veterinary medicine in this country. It is strange that, whilst the foregoing doctrine was only published in a permanent form in 1850, from previously published lectures; in his first book published in 1823, we find the following interesting passage, which contains so much of the truth, that it is a wonder that more should not have been arrived at, by such an indefatigable man, unprejudiced as he was in all his inquiries :—"Furthermore, it seems to us, that these elastic parts assist in the elevation of the feet from the ground, in those paces in which they are called into sudden and forcible action. The suspensory ligament, by its reaction, instantaneously after extension, we feel inclined to believe, *aids the flexor muscles in bending the pastern-joints:* the astonishing activity and expedition displayed in the movements of the racehorse, at speed, seem to be referable, in

part, to the promptitude with which the suspensory ligament can act before the flexor muscles are duly prepared; the latter, we should say, *catch*, as it were, and then direct the limb, first snatched from the ground by the powers of elasticity."

Youat, in his work, *The Horse*, quotes, and adopts Percivall's views on the functions of the suspensory ligament, as above referred to.

I should not feel that I had done justice to my subject if I had not taken care to ascertain the most recent opinions, expressed by eminent anatomists who have written on it, as well on the continent as those of our own country, and I find in the works of both French and German writers, most of the organs and textures to which I have alluded well described. What I, however, have aimed to supply, is an understanding of functions; exposition of parts as they appear under the scalpel forms only a part of what is required to make that knowledge of available use; it is the actions of parts that forms a most essential branch of veterinary, no less than of the science of human, medicine. Professor Bouley, as well as being the most recent of distinguished continental writers on the foot, has gone most elaborately into the subject; besides the anatomical description, so admirably illustrated, he has devoted 95 closely printed pages of his work to the physiology of locomotion, in which the functions of the foot and limb are treated. Fully appreciating the part on descriptive anatomy, I differ with him most essentially on the physiological part; Professor Bouley follows in the old beaten track of describing the suspensory ligament as endowed with elasticity, though he is evidently much perplexed to describe its action; he gives a long list of names of French and English authors whom he has consulted, including Lafosse, Bourgelat, Girard, Osmer, James Clark, Moorcroft, Coleman, Bracy Clark, &c., &c., and the conclusion Professor Bouley arrives at I will give subjoined, in his own words and language, and shall neither add to nor take from, though I place on record my entire dissent from his views; firstly, as regards the function of the suspensory ligament, and as the functions of that organ are allied to others, it results that we differ considerably on matter-of-fact views as to how the foot and limb move:—

"Or, les deux grands sésamoïdes sur lesquels est ainsi déversée, par le mécanisme de l'inclinaison des rayons phalangiens, une somme considérable de poids, sont associés à la première phalange, d'une part, par des faisceaux ligamenteux latéraux, doués d'une très-grande tenacité; et d'autre part, à l'os du canon, par un appareil funiculaire, dans lequel se trouvent réunis, à un haut degré de développement, deux attributs presque contraires: la ténacité et l'élasticité.

"On peut avoir une idée du développement de cette double propriété, en exerçant un effort, dans le sens de l'extension, sur les deux extrémités d'un pied fraîchement préparé et appuyé par le milieu du métacarpe sur un point résistant. La pièce cède un peu sous l'effort, comme ferait une branche de bois vert de même calibre, mais on a la conscience que pour mettre en jeu son élasticité,

il faudra une puissance bien autrement énergique que celle d'un seul homme."[1]

I shall prove that that said powerful ligament possesses no property admitting of elongation, implied by the word elasticity, a property which has been assigned to it, and to which has been attributed the spring or descent of the pastern joint. Entertaining the belief that this ligament exerts an essential and very great part in the flexion of the foot, I was led to believe that it could not be elastic. I could see no reason why it should be so, but many why such a property would defeat the purpose which I contend it fulfils. Microscopical examinations of the structure of the ligament prove that it is composed of the white, inelastic tissue, the same as tendons and other ligaments; compared with the flexor perforans tendon, no distinction in character can be revealed by the microscope. The fact is, this ligament is perhaps the most powerful and unyielding in character of any in the component structures of the horse, and of itself passive—brought into action, however, or set free, according to the position of the limb. Since I shall prove that the ligament is non-elastic, and that the sesamoid bones are not suspended by it, I submit that its being called a suspensory ligament is a wrong denomination, founded on erroneous notions of its functions.

The ligament dividing into two branches below, they are inserted into the sides of the sesamoid bones, where the fibres merge into those connecting these with the lower condyles of the cannon and the upper head of the pastern bone. The sesamoid bones are secured by strong and fibrous fascia, and bands proper to themselves; their most obvious and considerable support is derived from fascia and ligaments, which embrace the joint posteriorly. We find that the perforatus tendon, in its lower third, between the knee, and hock, and pastern joints, gives off a strong band of its exterior fibres, which, spreading out, become dense and thick, and are intersected by transverse fibres taking a horizontal direction, strongly attached to the sesamoid bones laterally; it is attached to the perforatus tendon below, as its fibres are also a continuation of the same from above. This powerful fascia I may call a strong, ligamentous clasp, under which is formed a capsule common to both perforatus and perforans tendons; the latter, passing within the former, is continued to a

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[1] "The two great sesamoid bones on which, owing to the inclination of the phalanges, rests a very considerable weight, are united on the one hand to the first phalanx by lateral ligamentous bundles, endowed with great tenacity; on the other, to the cannon bone by a cord-like apparatus, in which are united in the highest degree two very different qualities—tenacity and elasticity.

"We can form an idea of the use of this double property, if we attempt to extend the two extremities of a freshly prepared foot, with the metacarpus resting firmly on a resisting point. The preparation yields a little in consequence of the strength employed, as indeed a piece of fresh wood of the same calibre would do; but one feels persuaded that to bring the elasticity of the part into play, a force infinitely more powerful than that of a man would be needed."—(Bouley, *Traite du pied du Cheval*, p. 178.)

greater length through the synovial capsule, and is endowed with a greater freedom for motion over the joint, as it passes in the groove formed by the two sesamoid bones.

The fascial clasp above noticed is thickest in its posterior centre, its horizontal fibres pass into the sesamoid bones laterally, becoming blended with those of the suspensory ligament, where it sends off a branch to join the extensor tendon. About the middle of the large pastern bone, these strong bands of fibres, from the same fascia, connect it with the lower end of the cannon, and head of the pastern bone.

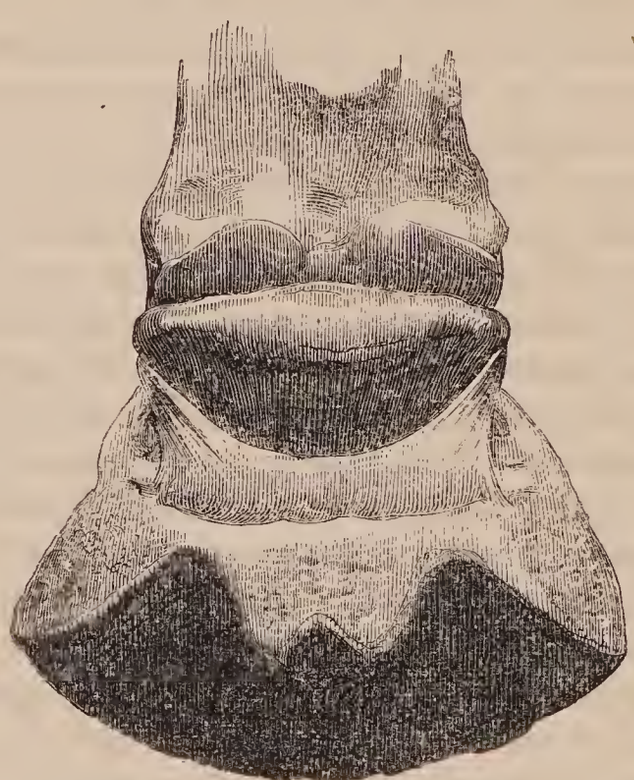
We observe a pair of strong ligaments going from the head of the pastern bone into the perforatus tendon; these must not be confounded with insertions of the tendon, their function forms a part of the great encircling apparatus to complete and strengthen this important joint structure. The fibres of these short lateral ligaments take a downward direction, from the head of the bone to the tendon, proving that their function is distinct.

I must now return to the consideration of some of the functions of the navicular bone, apart from any which, as far as I know, have been hitherto noticed. I described this bone in a former lecture as being connected to the posterior part of the coffin-bone by a flat ligament, which is attached to the whole of its extended lower edge; thus hinged together, the navicular forms a moveable ledge to the coffin-bone. I have now to supply a further description and explanation of structures in connection, and special functions of this bone, taken with others, apart from its connection by fibrous tissues to elastic structures, and the lateral cartilages, as before noticed.

Two powerful ligaments, one from each extremity of the navicular bone, pass upwards and forwards over the coronary bone, to which they are also firmly connected, and are strongly attached to the lower part of the pastern bone, laterally and anteriorly; the fibres of the ligaments run upwards and in a forward direction. In estimating the functions of these ligaments, we receive instruction by observing their direction and attachments; they are inserted into strong, roughened processes of the pastern bone, passing over the lateral ligaments, which attach it with the coronary bone; their insertion is strong and extensive, the fibres of the two almost meet in front, the expanded extensor tendon of the foot passes over them at that part; the point of attachment of these ligaments on the pastern bone is from an inch and half to two inches above the lower edge of each condyle; observing how strongly they are attached to each lateral extremity of the navicular bone below, tracing their direction upwards over the intermediate coronary bone, and then noticing the strong attachment to the pastern bone, no physiologist can contemplate such mechanism without attributing important functions. The fact is, the pastern bone is a powerful lever in connection, on the navicular bone.

I must guard those who already possess some knowledge of the form, position, and connections of the navicular bone, from imagining

that power exerted by the leverage alone on it, through the medium of the two flexor-pedal ligaments, imposes any strain on the attaching ligament which connects the navicular bone anteriorly to the pedal bone. The attaching medium of these ligaments extends in a transverse line across the whole centre of the foot, from the basilar process of the pedal bone on the one side, to that on the other. As I observed in a previous lecture, the fibrous structures intersect and are connected. Another fact in connection with the structure of these ligaments worthy of note is, the strength and extent of their attachment, their fibrous bands are continuous over the posterior margin of the navicular bone, so much so, and so distinctly, that I hesitated whether to describe them as two separate ligaments, or as one only



of the letter U shape. Looking, however, at their separate attachments laterally, with the cartilages and processes of the pedal bone in addition to that of the navicular bone, I see that they do not act by tilting up that bone as at first view I imagined, but their action extends across the whole centre of the foot on its strongest structures, and immediately under the centre of bearing; their office is to take a first part in flexing the foot. I am not propounding as a doctrine that the navicular bone is lifted up and down itself by these ligaments, and I am expressly denying the hitherto entertained notions that the sesamoid bones perform any moveable function up and down, as if suspended by an elastic spring; it is the revolving movement of the upper bones upon the lower, and the flexed or extended position of the foot that regulates the position of these bones; the sesamoids are so strongly attached to the pastern bones that they cannot move a line upwards, only as the bones to which they are attached are flexed.

Man, in his ingenuity, has so frequently and wisely imitated nature, that it has become a common practice in every-day observable works to refer to these as comparisons in explaining structures of joints, and other parts of an animal body. Some mechanical contrivances observable in the rigging and working of a ship may help to illustrate what we are endeavouring to describe: a block with rollers is attached to a mast or spar, through which slide ropes, and by which, with little exertion, a man lifts up and lets down great weights with ease; it is this action of pulley and projecting leverage that affords the horse such ease, power, and rapidity of movement, at a comparatively small cost of muscular power.

We are apt to connect the notion of strength with hardness of texture; hence we say a horse is powerful as he has plenty of bone; the fact is, horses often have too much bone when symmetry is wanting. Nature has accomplished this wonderful structure, a horse's limb, by giving just enough bone to sustain position, and has given joints so that the bones move one upon another, and form levers. She has completed the strength by blending in strong ligaments, fibrous textures which bend, but do not break. I think we may observe the same thing in art; we find ropes running by the side of spars, without which the harder material would not bear the strain imposed on it. The metacarpal and metatarsal bones of a horse would never bear the strain imposed on them by muscular power, but for the strength of the ligaments which, running parallel, sustain and co-operate; but these ligaments never stretch any more than the bone itself. There are other ligaments besides those already noticed, which perform a great part in flexing the foot, and which act through the leverage imparted by the same bones as act on the suspensory ligament; these are a broad flat ligament arising also from behind the knee and hock joints, taking their origin over and above that of the suspensory ligaments, they are inserted into the flexor tendons of the foot, in the fore leg about two inches above the fetlock joint, and in the hind leg somewhat higher up; it is worthy the attention of anatomists that these ligaments are inserted into tendons, which in the leg of the horse are necessarily long, and require an increased and separate power at their lower part from that which their muscles can impart, until the limb is brought into an assigned position; the size and strength of those ligaments in the fore legs are almost equal to that of the perforatus tendons, in the hind they are not so large, the action of the os calcis apparently compensates for the difference. We have only to observe horses in action after examining these structures, to see what great effect is produced by leverage of the bones with relative small expenditure of power.

I shall now solicit attention to three different parts, which I believe to be most important in their relative structures and functions as they influence the movements of the foot; the pastern joint, with the two sesamoid bones as components, the articulation of the os coronæ on the pedal and navicular bones, and the connection of the latter with

the lower head of the pastern bone by two powerful ligaments, and lastly, the yielding cartilaginous and fibrous structures, of which the posterior region of the foot is composed. Again, with these may be included the elastic properties of the hoof, subordinate to, and in harmony with, the structures contained in and situated above it.

When the horse first touches the ground in action, the posterior region of the foot, exquisitely yielding as it is, breaks the bound, the navicular and sesamoid bones at the same instant receive the weight, conveyed to them in an oblique direction, proportionate to the speed, implying length of stride in the pace. The flexion of the foot and limb takes place whilst each bone is moved in a perfect line of bearing to transmit the weight through its assigned axis.

The spring imparted to the movements of the horse is greatly contributed by the foot, and much of it by the construction and elastic nature of the hoof; that springy movement may be however, and often is, annihilated by derangement in its functions through artificial interference. Strickland Freeman, in comparing the wall of the horse's hoof to the human nail, said: "It is hardest in the middle, and softer and thinner on the sides, in consequence of which any exertion may be best carried on by a given elasticity quite to the middle of the nail; the hoof of the foot of the horse is of the same construction, which produces an elasticity continued from the quarters to the point of the toe. That point is the fulcrum of the spring when most violently exerted, as when a horse is galloping in full speed, or when drawing the greatest weight; the toe of the foot is naturally, therefore, the hardest part, that it may be best enabled to resist the violent concussions to which it is continually subject from encountering hard and uneven surfaces." The *sole*, as the second component part of the hoof, in regard to the space it fills, performs an office in the spring of the foot equal in extent and importance to that of the wall; a great mistake has prevailed in the treatment of this part of the foot of the horse since our veterinary school was first established; it has been thought that the office of this organ, the sole, could be best performed by causing its destruction, hence it is constantly pared away; the fact is, as might reasonably have been supposed, its capability for performing its important offices depends on its integrity, and also on its being maintained in its normal healthy state; next to cutting away the sole, its being kept constantly in excessive moisture is the great evil and prevailing custom. The functions of the sole are to defend the sensitive parts, to yield and spring like the wall, and it is also the principal part that keeps the wall from compressing; it, in fact, maintains that approach to a cylindrical form in the hoof internally, which is the natural one, and affords freedom to the functions of the organs contained; if the sole be removed or weakened, there is nothing to prevent the wall collapsing below, and if it be kept unduly soft, it will in a degree admit the same deformity in kind, as results by paring it away, it will yield upwards or downwards as we see it does; by these means we see feet becoming unduly concave and hollow, their sides collapsing to-

gether, and in the heavier class of horse, the sole, from the same causes, unable to sustain the position and govern the capacity of the plantar surface, bulges downwards, and the wall still falls in, in its upper part. This deformity is inherent in horses bred on wet marshy ground; we generally find these with a broad bottom surface to the foot, with the soles weak. We can tell, by examining a young horse, on what sort of land he was bred, by the aspect of his feet; and we can also tell by his feet, legs, and general appearance, whether he has been bred in a stable or farm-yard, instead of on the necessary, good pasture land. The *frog* comprises the third part of the hoof, as we have described, and completes this elastic yielding structure. As I have said, the feet being the fulcra and springs on which the horse moves, it will not be difficult to see that a clear understanding of their structure and function, exactness and nicety in the art of shoeing them, are objects of the first importance. Nature, always bountiful, has given to the horse such strength, and made his hoof so durable, that it resists the effects of a great deal of mismanagement, so much that people have been with difficulty led to understand the importance of the subject. As in my next lecture, when treating on the practice of shoeing, I shall have again to refer to those parts, I will not dwell longer on them now.

In conclusion, I have to observe, that, attaching more than ordinary importance to the subjects treated in this lecture, I have not ceased to work at them up to the moment these pages are issuing from the press. Advancing new physiological views on the foot and limb of the horse, I have spared no labour to increase knowledge, and to exclude all chance of error in my conclusions. Not relying alone on views long entertained, I have submitted everything doubtful to the severest scientific tests. To Mr Clark Stanton I am indebted for two beautiful illustrations of the lateral flexor pedal ligaments; to my son, Arthur, for some very nice dissections, and microscopical examinations of the suspensory ligament and other tissues. The subjects are too great and numerous to be treated in a lecture. More anatomical details of parts is necessary, and this may be supplied by the work, now ready, on *General and Descriptive Anatomy,* by Professors John Gamgee and James Law. As some of the observations advanced in this lecture may not be deemed entirely unworthy the notice of comparative anatomists, perhaps some one may suggest a name that could be agreed on, for that which is now called the suspensory ligament, a name only calculated to perpetuate erroneous notions of its function. Stubbs, the greatest as well as the oldest of English anatomists on the horse, called it, in his work of 1766, "Interosseous ligament." That term conveyed an idea of its position, without any erroneous import.

Case of Abscess in the Brain of a Horse. By W. Litt, V.S., Shrewsbury.

As diseases of the brain of the horse are by no means of common occurrence, and always afford a peculiar interest to the comparative physiologist, the one which forms the subject of these remarks, being in some respects, as far as my own experience is concerned, of an exceedingly rare character, may probably be considered worthy a place in the pages of the *Edinburgh Veterinary Review.*

The animal of which I am about to treat was a remarkably handsome roan cob gelding, six years old, the property of a farmer, at a place called Upton Magna, about half-a-dozen miles distant from Shrewsbury, and I was first requested to see him on the 3rd of May last. He had then been unwell for the past fortnight, although it was only within a day or two, I was informed, that the symptoms had assumed anything like a serious character. Up to that time he had been under the care of a farrier in the neighbourhood, who had, of course, submitted him to rather active treatment. The earliest appearances of disease, as far as I was able to gather the history of the case from the owner, had not been very marked. He was simply observed to be dull and stupid, weak, and out of spirits at work, and with a somewhat impaired appetite. The person consulted professionally pronounced it "a cold," bled heavily, and gave a dose of physic—manifestly an over-dose, for it seems the patient suffered severely from super-purgation for several days. On his recovery from the effect of this treatment, he was ordered to be turned out by day, the cure being considered complete, and time only required to enable him to regain his strength and spirits. But after a few days the animal was observed to be rather worse than better, a slight staggering was noticed in his gait, and his eyes—and more especially the off eye—presented a somewhat peculiar appearance. His former attendant was again consulted, and the "cold" was now declared to have settled in the eye; some medicine was administered, and a strong blistering liniment rubbed over a considerable portion of the off side of the face and forehead, even including the eyelids. It is scarcely necessary to say that no relief was obtained by such means; the symptoms became daily worse; the farrier confessed himself puzzled, and I was accordingly sent for.

I found my patient in a very comfortable box, standing, or rather leaning against the wall with his right side, his head resting on the manger, and apparently sleeping. On rousing him, he commenced to eat somewhat greedily, and continued to do so for several minutes. Gradually, however, he seemed to become again lethargic, and subsided into the position in which I first found him. On moving him round—a work of some difficulty, as he reeled and staggered about a good deal, and was only prevented from falling by great care—I observed that the head was strongly inclined to the off side, and the near eye was slightly inflamed, though evidently quite sensitive to

the impression of light; but the other one I was unable to see on account of the great swelling of the lids, produced by the blister which I have already mentioned. On being spoken to, he manifested for the moment perfect consciousness, and when released, turned round to the manger, and again began to eat, but soon relapsed into his old condition. The pulse was little or not at all disturbed, and the secretions natural, excepting that the fæces, considering his diet, which was chiefly mashes and green clover, were a little hard.

With such a train of symptoms there could be no doubt that the brain was the seat of very serious disease, but of what precise character it was not easy to determine. My prognosis was, of course, an unfavourable one; but nevertheless I did not hesitate, at the owner's request, to try the effect of what I looked upon as more proper treatment. Large setons were accordingly applied on each side the head, and a moderate dose of physic was given.

On the following day, I again visited him, and found the medicine acting freely. He had lain down in the night and risen of his own accord, and was evidently a little livelier, ate more freely, or rather for a longer time without becoming lethargic, and on the whole we fancied him something better. On the 6th, however, I saw him again, but found no amendment, indeed, if anything, he was now rather worse. The pulse was upwards of 60, his breathing somewhat hurried, and there was a good deal of fever. His dung was again hard, and he had greater difficulty in maintaining a standing position, although he still managed to rise without assistance. The setons were suppurating freely. I gave another aperient, and ordered him fever draughts night and morning, but held out no hopes of his recovery. Two days later, the alteration was not very great, excepting that he lay down longer, and slept more continuously, though he still ate well when roused up, and seemed quite conscious when spoken to. As the effect of the farrier's blister had partly subsided, I could now see the off eye, and I found it quite insensible to light. The pulse had again fallen to about 30.

Shortly after this time, my friend, Mr Sam. Fisher, V.S., of Stamford, being on a short visit at my house, I asked him to look at the case. He agreed with me that there was little hope, but, looking on it as probably one of effusion into the ventricles, and having in dropsical affections been in the habit of using elaterium with fancied good effect—the owner also being very reluctant to have the animal destroyed—he suggested a trial of this drug. A scruple-dose of elaterium was, therefore, given in ball, and a blister applied to the head. Violent griping pains followed the administration of the medicine, but no hydragogue action, and the malady was in no degree arrested.

From this time up to the 18th, the poor animal continued to suffer. He was now unable to rise, and had become a good deal emaciated. The desire to eat was still as strong as ever, and the powers of mastication and deglutition were unimpaired, but it required so much force and trouble to rouse him, even for a few minutes, from the state

of torpor into which he constantly subsided, that he did not take much food. Both the pulse and breathing were also now much quickened. Although turned over once or twice every day, his shoulders and thighs had now become quite raw, and altogether he presented so hopeless and painful an appearance, that I obtained consent to have him destroyed. This was accordingly done, and I had his head carefully removed, to allow of the post-mortem examination being properly conducted.

On removing the skull-cap, nothing particular was observed, and the whole of the brain was therefore carefully taken out. When turned upside down, however, and viewed in this position, that portion of the organ which is termed the *pons varolii* presented a peculiar appearance. On one side—the left side—there was a considerable enlargement, not marked externally by any injection or discoloration of any kind, but simply by a fulness of the part. With this exception the organ appeared, as far as I could see, entirely healthy—no inflammatory marks of any kind, and no effusion either in the ventricles or elsewhere. The tumour fluctuated when pressed, and, on being opened, was found to contain about an ounce of rather thick, creamy-looking pus. The mystery was therefore solved; it was neither more nor less than an abscess in the substance of that portion of the brain known, as I have just said, as the *pons varolii*, or, as it is sometimes called, the *annular protuberance*, the point of junction of the spinal cord, brain, and cerebellum—the centre, in fact, of the cerebro-spinal system—and confined to its left side.

Our knowledge, as veterinarians, of diseases of the brain is so very incomplete, that I have thought it right to put this case on record—not because I look upon it as throwing any particular light on the subject, or even as offering a basis for deductions of extraordinary value to the pathologist, but simply as one of rare occurrence, and whose phenomena are so well marked, that they cannot fail to possess some interest for the scientific inquirer. It is only by the accumulation of facts of this character, that the foundations of an improved knowledge can be laid, and I merely add this to the heap. In a rather large experience of nearly twenty years, I have of necessity met with numerous cases of brain disease, and many in which the symptoms did not differ very materially from those here described; but the precise character of the malady in this instance, its exact seat, and the extent of the lesion, were such as I had never before observed. Into the more mysterious question, however, of its probable causes, either remote or other, I confess myself incompetent to enter.

On the Position assumed by the Horse's Fore-Foot in Progression.

By R. H. Dyer, Waterford.

(*To the Editor of the Edinburgh Veterinary Review.*)

Sir,—You kindly reminded me, in a note at foot of my communication which appeared in the *Review* in September, that I had not read much that had already been written on the above subject, by Messrs Carson and Lupton, as well as Mr Gamgee, sen. It is true, I had not read, at least, if I *had* read the letters which appeared in the *Veterinarian* for 1859, I must have forgotten them. Since your reminder, however, I have carefully conned them over, and will, with your permission, make a few observations upon them. Firstly, in the *Veterinarian* for 1859, at page 10, may be read a short paper by Mr Lupton, Veterinary Student, upon this subject; Secondly, in the same journal will be found a paper by Mr Paton, at page 190; Thirdly, at page 297, can be seen another paper by your respected professor, Mr Gamgee, sen. In the *Edinburgh Veterinary Review* is a letter from Dr Carson, which latter has called forth all subsequent remarks, which have, and may be, written upon this all-important subject.

I am obliged to Dr Carson for giving me an opportunity of extending my remarks upon the subject at issue, as it will doubtless bring out a good deal which has lain dormant. I anticipate much pleasure in the perusal of some observations by those who are capable of doing more justice to the subject than I am. Up to the present moment, no person has *proved* anything.

Opinions merely have been advanced; although, I daresay, each writer thinks his statements might be accepted as evidences of proof. I will give the worthy doctor credit for being an astute observer. There is one thing certain, both he and I have but few followers at this moment. It requires great powers of reasoning and argument, more than I am endowed with, to upset *old* opinions and old prejudices; and as he very judiciously remarked, we require something more than *theoretical* reasoning to convince us that our eyes have led us astray. The doctor seems to have commenced his career with the impression that the heel was the first part of the foot to touch the ground, and that the horse walks from heel to toe like a man. It seems remarkable, he goes on to say, that any *judge* could entertain a different opinion, and he indulges in a somewhat strong expression that such opinions amount to absurdities. The doctor is determined to present to us the foot and hand of man as examples. I cannot admit the analogy. It seems to me that man bears *no* comparison whatever to a horse. No solid-footed animal can, by any parity of reasoning, be admitted to compare with cloven-footed ones, or with man. If Dr Carson argues the point, or ventures to state his views and opinions, they must be confined as much as possible to the animal in question;—for example, if we were to speak of the effects of certain drugs upon certain animals, we may do so *ad infinitum;* for instance, a man may swallow

opium, and, as a general rule, it is retained on the stomach, it does not produce vomition. If opium be administered to a dog, in any quantity, it will produce vomition. Again, a dog will bear a large quantity of aloes—man will bear but a very small portion. And yet, both animals have but a single stomach. These, and many more instances may be adduced to support my position, that we cannot *always* reason from analogy. When the doctor compares the laying of his hand upon a table to that of the horse laying his foot upon the ground, it occurs to me the idea is *monstrously far-fetched.* Commence at the heel of the hand, as he terms it, and enumerate the joints met with, to the end of the fingers, and then look carefully at the construction of the horse's foot—what difference is there? Several joints in the hand, all the coverings of the bones made up of soft parts, there is no horny matter, except at the ends of the fingers, and that so partial that it merely affords protection and support to the parts upon which the horn is placed, the provision is most beautifully shown upon some hands. Now, turn to the foot of the horse. What do we see? No joint is observable to the eye, the foot is encased with horn,—a box, as it has been termed, which entirely shuts out our view from the structures beneath; if we *could* observe them, we should find but one joint which is capable of being compared to that of man, and this would be but an imperfect comparison indeed. In my humble opinion, the foot of the horse must not, cannot be analogically considered with the foot of man, and my reason for so saying is this:—

The os calcis of the horse is placed at a long distance from the ground, it *points upwards* and backwards; the tendon of the astrocnemius externus is attached to the point of it; below this we find the large metatarsal bone, which measures eleven inches in length; under this bone is the suffraginis, measuring three inches; under this again, is the os coronæ, which will be found to be two inches in length, besides which the pedal bone, which is about an inch and a half deep. I am here speaking of the measurement of bone itself. I don't include the bulk of *cartilage* entering into the formation of the various joints, nor the horny covering of the foot itself, which together will make a difference of about one inch additional, so that the entire distance from the point of the calcis to the ground we shall find to be twenty-two inches and a half of *bone,* and the joint from hock to foot nearly perpendicular. I need not, I am sure, do more than refer you to the foot of man to see if this bears comparison to it; besides there is another and most important difference to be considered. We, as men, walk *entirely* upon our *hind* legs, if I may be permitted to use the expression; the horse, as I before asserted, does so upon all four, he *requires* four legs to enable him to progress. There are some animals whose calcis is placed upon the ground in walking, I freely admit, but it is the *horse* we are describing, and it is the *horse* we must confine our remarks to. Again, in comparing the foot of man to the foot of the horse, we must look to the structures

we find composing such parts, and we cannot see any analogy existing between them; at least I cannot.

The doctor seems to forget that we are endeavouring to describe the action of the *front* foot, *not the hind*, of the horse. To compare the motions of the front feet of the horse to the same parts of man, we should confine our attention to the hand; it is not generally known, by members of the medical profession, especially those who have not made comparative anatomy a study, that the carpus of man is the knee of the horse, and the knee of man is the stifle-joint of the horse, the heel of man is the hock of the horse, &c. I am fully aware of the truth of my remarks, having frequently conversed with eminent men in their own profession. I do not mean to insinuate that Dr Carson is not perfectly aware of these differences—no person would attempt to *argue* such points without a *good* and *accurate* knowledge of the anatomy, if not the *physiology* of the parts upon which he writes; and I would add, that in order to understand all this, he must be fully acquainted with pathology also; more particularly the practice of the forge. Without the latter knowledge, no man, however closely he may observe the *action* of horses, can know what is going on in the feet of these animals.

We will now take a glance at what we find in the practice of the forge. If a front shoe is nailed too closely to the heel of the foot, we find, in the majority of instances, the horse *crippled* in his action, especially if the shoe is short; secondly, if a shoe is lost in the hunting field, and the animal has to travel home, minus a shoe, any distance upon the road, we have evidence of the *toe and quarters* being so much worn that it is difficult to nail another shoe to the foot—the heels do not participate in the injury to any extent; thirdly, if the weather comes in frosty, so as to have a demand for calkins, we dread the use of these things, as we all (I mean practical men) know, to our cost, how difficult it is to keep or prevent the feet from being injured by the turned-down heels, or calkins, as they are termed. The diseases we find in these cases, are suppurative corns and bruises, &c.; twenty-four hours are oftentimes sufficient to produce a corn, which, if not immediately attended to and pressure taken from the heel, we are annoyed for weeks in the treatment of them when neglected for a few days only. Again, hunting horses, as a general rule, are more prone to lamenesses than harness horses, in consequence of the shortness of the shoes, necessarily producing more pressure upon the heels than they can bear; or, if the heels of shoes are thickened for certain purposes, if they happen to be short, they will produce disease in the heels; in short, the heels of the front feet *cannot bear pressure at all*, when compared with other parts of the feet. These *practical* remarks will, I think, go far to prove that the heel is not the first part to attach the ground. I need not, I am sure, dwell longer upon this part of the subject; as every man who has any *practical* knowledge of the concerns of the forge is aware of the truths I have attempted to place before you.

If I do not mistake, *we* ought not to place *our heel* first upon the ground. If Dr Carson will take the trouble to inquire of any military officer, as to the *proper* method of marching, he will be informed that the foot should be placed *flat upon the ground.* He will doubtless argue this action is *acquired*—not natural. Whether natural or artificial, it seems to be the most convenient and best adapted for *elegant* as well as *safe progression.*

I have, I think, given *some* reasons for my so objecting to heel or toe, and I think the one advanced in my former letter was not *theoretical,* but sufficiently practical for any person to understand, viz., the wear and tear of shoes. If a front shoe be examined, after a month's wear, we shall discover that the *toe* of the shoe is *the* part most worn. How is this to be explained, if the heel of the foot came *always* to the ground *first?* How is it that the heel is not found more worn than other parts of the shoe? This is a question no person can put aside. One of two things must take place. The toe is the part which first touches the ground, or it must be worn in being taken up from it. I think those who *go in* for the toe, have good ground for their assumption from this fact alone. There are so many circumstances to be taken into account when discussing this subject, that it cannot be disposed of summarily. It requires much reflection, and a vast amount of reasoning brought to bear upon it, in order to convince any person, so fully impressed as Dr Carson seems to be, that he is in error. The varied forms of horses, for no two horses are alike—their movements, when sound, and otherwise, together with the peculiar way some are trained—the habits they acquire from defective and imperfect teaching, coupled with the gait of those with infirm or diseased parts—all these things must be taken into account so as to come to anything like a true position of affairs. Horses are often seen travelling upon their heels, others upon their toes; some are found to place the feet flat upon the ground, and so on. The question which arises is this, If these animals are all sound ones, and properly constructed, how comes it there are so many methods of going? They may all be going right, in their own peculiar fashion; but what we want to learn is, whether the heel or toe, or flat of the front foot, is the first part to grapple with the earth? *Any deviation from a certain mode of progression might be considered exceptional,* and it becomes our duty to ascertain if there be not a *certain* rule to be laid down for such and such action. I think, by taking a *medium* course, we shall arrive at the truth, and this will be found to be that of assuming that the foot was intended by nature to be placed upon the ground *perfectly flat;* that is to say, presuming the animal is *free from infirmities,* and the road upon which the animal is travelling be also free from disease; that is, perfectly level. I have directed the attention of a great many good judges of horses to this subject, and, without exception, they are all for the *flat foot.*—I am, &c. R. H. Dyer.

Waterford, *Oct.* 2, 1861.

On the Positions assumed by the Horse's Foot in Progression. By Richard Poyser, Veterinary Student, Ashbourne, Derbyshire.

(To the Editor of the Edinburgh Veterinary Review.)

Sir,—Having perused the papers on the above subject, in the three last numbers of the *Edinburgh Veterinary Review*, and not exactly entertaining the same views as their authors, I am induced to comment on them, and give you my opinion, as far as my limited scale of judgment will allow.

There appears to be a variety of notions arising from the simple question, but one not easily unravelled, "How does the horse's foot come to the ground when in action?" and although it is handled by professional and scientific men, I think, from their several ideas, the query may be, and sufficient space is allowed for it to be, resolved into another, which to me seems by far the most probable.

Dr Carson draws a comparison between the action of the horse's foot and that of the foot and hand of man; still I do not see the least requisition for it: however, if a comparison must be drawn, I make no hesitation in saying that the foot of the horse may be compared to the foot of man, with more impunity than it may be to his hand; for this one simple reason, if for no other, that in man, the feet alone are used in progression, and the hands for grasping and lifting; the lips of the horse are equivalent to the hands of man. Further, a man can place his hands on the table as he thinks proper, but it does not follow, as a matter of course, that the heel of the hand must touch the surface first, and as for a man attempting to go forward on all-fours, (as I presume the doctor means), it was never intended by his Creator that he should; therefore the idea is both unnatural and preposterous. There are many different ways in which man brings his foot to the earth; and as he alters his paces, so in some measure does he alter the manner in which he treads; yet there may be no pathognomic symptoms existing to cause a deviation from one particular position, (be that which it may); hence, all the different positions assumed may be considered natural, provided the man be not malformed or injured.

Just the same is it with the horse. As soon as he becomes domesticated, and gone once through the hands of the smith, his natural action is somewhat changed; there are many circumstances to corroborate the fact, that domestication creates considerable alterations in the structure, functions, and actions of the horse.

I may now remark, my opinion is, "that the horse's foot assumes three positions as it comes in contact with the earth." Some horses bring the heel, and some the toe down first, but both in such a slight degree, that it is difficult to be seen, even by a keen observer, when travelling on a level surface; of course both positions are very perceptible, when the animal is going up or down hill, and more so with

a load than without. Others, I may say, with certainty, the majority, plant the foot flat on the ground; and it is obvious, the firmer the foot is set down, the safer is the horse's action and the neck of the rider. All horses, like men, are not supposed to have the same action, and to imagine that there is but one standard method for the horse to place his feet, when in progression, is ridiculous. As mentioned, with respect to man, there may be no disease present, therefore the three different positions are natural.

Any one who will take the trouble to examine shoes as they are taken off at the forge (as referred to by Mr Dyer), will perceive that the attrition of some is greatest at the toe, and of others, greatest at the heel, while some will be completely worn down on one side, and the newness on the other scarcely removed; but by far the greater number are worn level, when the nature of the work the wearer has to perform and the nature of the country in which he has to labour are taken into account, and provided the shoe be made level and put on as such; but to save trouble, the generality of feet are made to fit the shoes, and not the shoes to fit the feet. There is no doubt but that the weight, the make, and the setting on of the shoe, are incompatible with perfect action to some extent, and that the horse, when in a state of nature, brings his feet in contact with *terra firma* in the different positions alluded to.—I am, &c. R. Poyser.

On the Theory and Art of Shoeing Horses.

(From the Scottish Farmer and Horticulturist.)

This important subject, we rejoice to see, is again receiving some of that merited attention which was accorded to it at the beginning of the present century, and which has been so undeservedly withdrawn during the last twenty or thirty years. The difficulty of treating this subject under the above double heading will be apparent to our readers as it is to ourselves. It is only in words that we can in this place attempt to supply those who seek information on it.

In the practice of shoeing horses at present it is more customary to act without reasoning, or if people think at all, it is after the act, and when palpable harm has resulted. Theory and art combined, is our motto. In writing we can only treat on the first of these; to put our theory to the test, we must go to the shoeing-forge—in a word, must be where our work requires us.

The art of shoeing horses has so direct an effect on their usefulness and value, that it is matter of high interest, not alone to the land-owner and tenant-farmer, but to all who keep a horse for use and pleasure. Amongst the former are not a few whose livelihood depends on the fitness of their horses for work; we may go still farther, and say that people who never owned horses have an interest in all that ministers to their well-being, apart from the question of humanity.

It has long been said, and we have not seen it denied, that more horses are disabled from our cavalry and other branches of the public service, through defects in their feet, traceable to defect in the art of shoeing, than from any other cause, and we have even heard it said by authorities, more than from all other causes united.

Whenever there arise threatening reports of war, or when the unfortunate reality occurs, the price of horses for military purposes augments from 50 to 100 per cent., as was the case within the last seven years, and the authorities are even put to their wit's end to find them. Horses must be had, and every one must contribute his share to pay for them.

The practice of shoeing requires from its devotees a knowledge of science and art. The art of shoeing horses bears little analogy to smith's work, with which it is commonly allied. The latter is a mechanical work to be carried out by rule; not so the successful application of an iron shoe to a living horse's foot; in this process a knowledge of the organs and textures acted on is required.

In returning to discussions on the art of shoeing horses at this epoch, after a long stagnation, which succeeded much erroneous teaching, there is necessarily a great deal to pull down in order to make room for a sound theory and rational practice. Like every other branch of useful knowledge, this will progress and produce good results in proportion as the public is rightly informed of the true state of the art, its importance, and required improvement. Those who require to learn enough about the art of shoeing to apply their knowledge to practice, can only attain to such proficiency by using the same means to learn the rules and apply them, as are adapted in other arts neither more difficult nor more important.

The foot of a horse, as we investigate it, and more and more understand it, will be found to constitute one of the wonders of creative structure—endowed as it is with great strength to support weight, and endure long-continued exertion at great speed, yet exquisitely exact in all its movements. To protect this organ from being unduly consumed in the performance of the work to which man has submitted the horse, is our business.

The first requirement in a man who undertakes to shoe horses is a knowledge of the component parts of the foot, its normal form, and its movements when in exertion; this may seem too much to exact from men to whom little opportunity to acquire the knowledge has been given. We are only stating, however, what is required, knowing well that for a while less must necessarily be accepted. The art of shoeing a horse is one that demands the application of mind no less than of hand and arm work. Some of the most essential rules are very simple, and such as common-sense might be expected to dictate; we will attempt hereafter to explain these, as we shall point out some of the opposite prevailing practices, sanctioned by custom to some extent. Though we can point to no epoch when the art of horse-shoeing was in a satisfactory state, still, when we peruse the writings

of such men as James Clark of Edinburgh, of Freeman, and others of the last century, we see no reason to congratulate ourselves on the kind of instruction that succeeded, or the effects which followed. Looking to all that has been taught on the art of shoeing in this country during the past half of the present century, we may say there is nothing but confusion, which has become more confounded. For a while the errors promulgated extended slowly; at length, however, the circle widened until every horse-shoer had a plan of his own, and owners who had read of new crotchets gave orders in accordance relative to the shoeing of their horses. In fact, though nothing had been taught at our schools on the art of shoeing for the last thirty years—the subject having been given up as a bad job and a failure—yet the profession had to submit to be fought with its own weapons.

The first undeviating rule to be carried out in shoeing is, that the natural bearing surface be given to the foot—any deviation disturbs the line of bearing, not in the foot alone, but in the whole limb. To carry out this rule in practice, the depth of the hoof in all its parts, front, quarters, and heels, must be adapted under an intelligent understanding: this done, the bottom circumference of the foot is thereby regulated. The man who understands to do this part is most likely to know how to adapt a shoe accordingly. In the earliest stages of horse-shoing, and in those countries where, up to the present time, the art has undergone the least change, they studied the way that the hoof was worn, and modelled their shoe in accordance. How much the anatomy of the foot was understood, or how much was due to their intelligent observation on the external hoof, we cannot say, but since we do know that the functions of the horse's limbs were so far understood as to lead to written descriptions by the Greek authors, which we may read with profit, we think we are warranted in believing that the men understood why they were giving the shoe an adaptation to the foot, deviating from the straight or flat line, but in accordance with the motion of the foot. In these islands it seems that no account was ever taken of the necessary deviation from a flat or level surface; the horse's foot was reduced from its overgrown state to something like its required proportions, and made level on its bearing or ground surface, and the shoe was then fitted accordingly, The man was considered the best workman who could adapt the two straight surfaces of hoof and iron with the greatest nicety.

In 1815, it was reported that horses went better in France than they did in England, on account of the respective methods of shoeing in the two countries. The great Duke of Wellington and many of his officers affirmed as much after the battle of Waterloo, when it was said that many of the horses which fell into our hands, that had evidently been two or three days without shoes in campaign and battle, still exhibited feet uninjured, whilst our horses were disabled in an hour or two after losing their shoes. On comparing the horse's feet, it was believed that different methods of shoeing led to the different results. The subject was spoken of in London, and some people

wanted their horses shod as they were done in France, and what was called *French shoeing* was done at some of the London forges, but with unsatisfactory results. The question then arose, what was French shoeing? No veterinary surgeon or farrier knew; why, it was said to be a turn-up at the toe, with nail holes coarsely stamped, and even Mr Coleman thought this latter was an improvement; but the truth is, what they called French shoeing in England was such as had never been seen in France, or applied by an expert French farrier; it was French shoeing caricatured, or misapplied in London; it was soon said that this shoeing will not answer in England with English horses and English roads. Mr Coleman, in the meantime, went and spent some months in Kent, consulted his friends the Messrs Wright, postmasters of Dover and Canterbury, on the matter, and they informed him that, across the water, post-horses only travelled at the rate of five or six miles an hour, and that the roads from Calais to Paris were all paved, and that the horses used for posting and coaching in France were of a heavy class like our plough horses; and so the Kentish postmasters had settled the question; there was no need of going across the water to inquire further. Mr Coleman returned and told his class that the evidence was conclusive. He said that heavy horses are not susceptible to contraction of the feet, and that with paved roads the frog always get pressure by the convex stones, which keeps the foot expanded, and that the pace was not such as to produce jar and lameness. To this illogical stuff the students sat and listened; but what was called French shoeing was not found to answer, some of the imaginary, but none of the essential parts, met with approval. The turned-up toe seemed, more than anything else, to catch. The late Joseph Goodwin, veterinary surgeon to George IV., wrote a work on shoeing, entitling the plan he advocated, "The French Method Improved." This had nothing French about it, but it had a turned-up toe. The toe was to be turned up considerably out of the line of bearing; some other modifications were recommended, but the whole proved a failure. We have not time to enter more upon this turning up of the toe—which involves the removal of an important part of the hoof where it is strongest and essentially required, and partly supplying its place by iron, the rest being left vacant. This is accompanied with other little deviations from rule, such as giving a concave bearing surface, springing of the heels, &c., of which we have not time to say more at present, only protesting against its being called a French plan. It is wholly English. Nowhere else have we found the art so unsettled as to lead either practitioners or owners of horses to have recourse to such procedure.

A Wound penetrating the Abdominal Cavity, and Removal of Omentum. By D. C. Emmott, M.R.C.V.S., Keighley, Yorkshire.

On the 23rd of August last, I was requested by Mr Benson of Malham, to attend a filly fifteen months old, that had received a stab from one of the heifers that were being depastured in the same field. On my arrival, I found the animal suffering from a severe wound in the left side, between the cartilages of the false ribs, through which protruded a portion of the omentum, about thirty inches in length, and two inches in diameter at the abdominal opening. The protruded omentum, from being firmly grasped between the lips of the wound by the consequent swelling around the breach, was much congested, and had rather an offensive odour, which did not much surprise me, as, on making inquiry as to the time it had been hanging out, I was informed from the day previous, and the weather being warm, favouring early decomposition; still there was no constitutional disturbance. I at once had the animal cast, and removed the substance close to the external opening, and arrested the slight hemorrhage by cold water and pressure, then carefully reducing within the abdomen, brought the lips of the wound together, and secured them by silk sutures; ordered the part to be bathed with a mixture of tinct. myrrh co. and water. At intervals warm fomentations to be applied over and around the seat of injury, and the food to consist of sloppy bran mashes, with chilled water or thin gruel to drink.

On the 25th I again visited my patient, and found her quite lively, but a good deal of swelling under the belly, which pitted on pressure; the swelling in the immediate vicinity of the wound somewhat reduced, and pus having formed, the centre suture was removed, and a little stimulating liniment rubbed into the swelled parts. I ordered the fomentations to be continued four times daily for an hour each time, and the liniment to be rubbed in after each fomentation. The bowels being rather inactive, gave Barb. aloes ℥ij., sp. nit. eth. ℥i., aq. q.s. Fiat haustus.

On account of the distance (which is 21 miles) from my residence, I did not see her again, but received favourable accounts of her progress. I have since seen her owner, who states she is quite well again.

REPRINT OF REMARKABLE MEMOIRS.

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Observations on the Variolæ Vaccinæ, as they occasionally appear in the Vale of Aylesbury, with an account of some recent Experiments in the Vaccination, Retro-Vaccination, and Variolation of Cows. By ROBERT CEELY, Esq., Surgeon to the Buckinghamshire Infirmary.

(*Continued from page* 616).

GENERAL OBSERVATIONS.

THERE was no apparent indisposition in either of the animals during the progress of the disease; the pulse, felt at the caudal artery, slightly accelerated at the acmé, and increased heat and redness of the mucous membrane of the vulva, were the only symptoms noticed; eating and drinking went on as before. As these experiments were conducted in the same manner and on a similar description of animal as those for the purpose of ascertaining the susceptibility of the cow to primary and secondary lymph, by inoculation, they are capable of showing only comparative results. As in those, so in these experiments, no pains were taken to exclude the animals or defend the punctures from the external air or the weather beyond the precaution of confinement to the cow-house on the first night of the operation; at all other times the animals were allowed to roam about the field. It is true that during the progress of the disease I was engaged in an attempt, on the same premises, to infect the cow with the blankets of a small-pox patient, who, though weak and feeble, was prevailed upon to manipulate and frequently approach the nostrils of that animal, and, at the same time, walk amongst the sturks. The small-pox, too, was prevalent, though not extensively so, around the premises, and the cow-pox was in existence in some distant dairies. The atmosphere was moist but not very cold. The mean temperature of the month, indicated by the external thermometer, was 39.6; the mean pressure, by the barometer, 29.62. There was rain thirteen days in the month, seven days were overcast without rain, and eight fine with clouds. The prevailing winds were west, south-west, and north-west. I am thus precise in relating these facts, conceiving that where so little is known of the circumstances which favour the reception of variola by the cow, scarcely any particulars can be safely omitted in the description of a successful attempt.

Without attaching undue importance to any of the above circumstances, we may feel inclined to presume that the constitution of the atmosphere, under which cow-pox and small-pox co-existed at the time of the operation, might possibly not be without its influence; but the utter failure of the experiment on the third animal clearly

shows that far more importance must be attached to the temperament and constitution of the animal, and the condition and texture of its tissues, as influencing its susceptibility. At the same time it is right to state that many failures, more or less decisive, have occurred to me at different seasons and under different circumstances, in precisely or pretty nearly the same modes of operating, when the skin and general appearance of the animals have induced more favourable expectations. In about half the number of such cases, retro-vaccination, subsequently performed, at irregular intervals, has succeeded in a more or less perfect degree. In the remainder it has been as unsuccessful as the previous inoculation with variola.

These facts, and the promptness and precision, (though of course under peculiar circumstances), with which the vaccine punctures in the first experiment answered, while only one of the variolous punctures succeeded, afford striking proofs of the preference of these animals for the morbid virus natural to their kind. But the repeated though abortive attempts of the other variolous punctures on this animal to attain to the character of vesicles, and the final success of four out of eight variolous punctures, in concurrence with an equal number of lymphless tubercles in the second experiment, after the production of similar abortive tubercles in an immediately previous trial, plainly indicate also defect in the mode, the means, and the spot, and seem to declare that improvements in those particulars may be productive of better success.

Here we are forcibly reminded of the circumstances attending the communication of primary and secondary vaccine to cows and men, both casually and by the artificial method.[1] The rapidity and certainty with which the disease natural to the cow is propagated by the hands of the milker, and the difficulty and occasional futility of artificial attempts at such communication, especially with secondary lymph, the inferiority of our method on man with a foreign virus, compared with the promptness and effect of the casual process, and the readiness with which such a virus, perfectly humanized, may be propagated from man to man by the artificial method, teach us that, to subdue or even to diminish the repugnance of the cow to a strictly human virus, we must have recourse to other means and measures than those by which, at times, we succeed in communicating its own. My experience has been too limited, my experiments insufficiently varied, to enable me to speak with precision on the best mode of retro-vaccinating, much less on that of variolating the cow. To acquire such knowledge, more time and ampler means than I have hitherto had at my disposal I am persuaded are absolutely necessary; but I will venture to throw out the following suggestions, which

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[1] Vide Progress of the Variolæ Vaccinæ, page 477; Casual Cow-pox in Man, page 538; Vaccination of the Cow, page 593; Retro-vaccination, page 594; Vaccination of Man with Primary Lymph, page 514.

have reference to the selection of the subject, the season of the year, and the mode of operating.

There can be no doubt that the nearer we approach the practice of the "best vaccinators of the cow"—the milkers—the more likely we are to succeed; and although, if it were possible to employ a number of small-pox patients to milk cows when their teats are chapped and cracked, we should not meet with the success that attends the manipulations of the former with a native lymph, yet it would not be unreasonable to expect a larger measure of success by this than by any other mode.[1] But the teats and udder of the milch cow, particularly with a thin skin, certainly should be selected in preference to any other part of the animal. It would be well not to have the animal too old, and the best possible assurance of its not having been the subject of the vaccine should be obtained. The back part of the udder, as being more out of the way of the milker, and more easy of access, would be preferable; but some part of the teat might be chosen which is least in danger of the casualties of milking—about the base for instance. If, however, the sturk, the young heifer, or young bull must be the subject, either the prolabia of the vulva or the scrotum would afford the best prospect of success, especially if the animal be well bred and have a fine thin skin, and be of a light colour. I have found punctures on the skin, between the lip of the vulva and the tuberosity of the ischium, succeed better than those on other parts in that vicinity. It seems not improbable that some preparation of the parts might usefully be practised. The skin might be rendered more sensible and more disposed to absorb by covering it with some adhesive substance for a week or two before the operation. For instance, a mass of moistened clay might be affixed and carefully retained in a moist state.[2] I don't know that there is any advantage in a deep puncture, but the skin should be fairly incised. Superficial wounds, *if of long standing*, seem likely to answer very well; they might, therefore, be easily made in anticipation, and in imitation of the casual fissures on the teats of the cow.[3] Liquid small-pox

[1] According to Dr Waterhouse (in a letter to Dr Jenner), the casual communication of variola to the cow has thus happened in America. Vide Report of the Vaccination Section, page 304.

[2] I have often succeeded in procuring vaccine vesicles *without punctures*, on the skins of children especially and young persons, by keeping lymph in contact with the skin, and excluding it from the air by a coating of blood. Active lymph, blended with blood, casually trickling down the arm and drying in the most dependent part, will often give rise to a vesicle. Not many days since I had a case where such a vesicle, at a distance of four inches from the inoculated vesicles, attained, on the twelfth day, the size of a small horse-bean, and having no *firm* connection with the skin at its centre, like the casual vesicle on the cow, it acuminated on the eleventh day, as perfectly as on that animal. Vide page 535, note. In our operations on animals we might take this hint.

[3] We are told by Dr Jenner that Mr Tanner succeeded best in retro-vaccinating the cow in an old superficial wound from which he had removed the crust. Such wounds, deluged with variolous lymph, and *excluded from the air*, might be highly serviceable.

lymph, the earlier taken the better, not later than the seventh or eighth day, the fifth or sixth, seems preferable, and it should be used abundantly. We see points will answer, but the liquid lymph is obviously more advantageous and infinitely more convenient.[1] But as it is very probable that the success of the operation may be greatly affected by the state of the atmosphere, as influencing the system and particularly the condition of the skin of the subject, this must receive especial care. Extreme heat and extreme cold seem alike unfavourable to the success of inoculation, both of small-pox and of cow-pox, as they are to the spread of infection, especially if attended with corresponding dryness.[2] Mildness and moisture would appear to be necessary. That condition of atmosphere which is well known to be favourable to the propagation and malignancy of small-pox of course would be advantageous—warm, close, and moist—and such as an experienced inoculator of small-pox would have *avoided* for his operations. His business was to mitigate; ours is to aggravate; we must, therefore, adopt the very means that he would studiously reject. Many punctures, much lymph, every natural advantage, and all the resources of art, seem necessary to ensure success to a moderate extent. Those who, like myself, attempt to sow a foreign seed in a soil with whose qualities and capabilities we are but indifferently acquainted, must not expect the same amount of product that doubtless will accrue to more expert, more favourably situated, and more experienced cultivators.

EFFECTS OF THE LYMPH.

Experiment first.—I need scarcely say that the effects of the lymph obtained from the above experiment were watched with intense interest, not unmingled with anxiety. Although some acquaintance with the physical characters of the natural and casual vaccine afforded sufficient assurance that I was neither rashly nor recklessly performing hazardous experiments on man, yet I could not be unmindful of the insidious but serious results of the very interesting and valuable experiments in India, performed by Mr Brown, before alluded to, by which it appears that a vaccine disease, propagated from the cows at Silhet, had *ultimately and unexpectedly* been

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[1] Variolous virus may be taken in bulbous tubes, or on small dossels of lint, and preserved between two plates of glass, one of which has a depression for its reception, such as Dr Jenner used in sending liquid vaccine lymph to Bagdad, &c. They are very convenient. Vide *Baron's Life of Jenner*, vol. i., page 420.

[2] I have often observed the retarding effect of cold on vaccination, and particularly of a dry easterly wind, more especially on those who are much in the air. Dr Adams gives a very interesting account of the effects of the *Leste*, or hot and dry south-east wind of Madeira, on vaccination, inoculation, and infection in general.—Vide *Medical and Physical Journal*, vol. ix., page 314. Griva mentions the difficulty experienced in many parts of Italy of vaccinating in a dry and furfuraceous state of the skin. He successfully used emollient lotions preparatory to the operation.—*Epidemia Vajuolosa e Lavori Vaccinici*, page 97.

accompanied by a varioloid eruption, and had assumed a fatal character.[1]

My concern was not a little increased, *for a time*, by the following incident :—My assistant, Mr Taylor, to whom I had entrusted the lancet used in opening the variolous vesicle in the first experiment, on the tenth day, while I was engaged in the tedious process of charging points therefrom, punctured the skin of his own hand, between the thumb and fore-finger, with the instrument while moist with lymph, a circumstance with which at the time I was unacquainted. On the fourth day afterwards he directed my attention to a hard, deep red, papular elevation on the spot, stating the cause, and at the same time assuring me that he had been vaccinated in infancy, and had subsequently had modified small-pox. On the fifth day there was a papulo-vesicular elevation, surrounded with a dark red areola, and much uneasiness in the part. In the evening, headach and other febrile symptoms appeared, with roseola and fiery red papulæ on the face and other parts. On the sixth day a more diffused and lighter areola surrounded the less abrupt elevation, which was now more perfectly vesicular ; the constitutional symptoms increased, and the papulæ, on the face, neck, trunk, and limbs, exhibited ash-coloured summits, and, through a lens, appeared to have slight central depressions. On the seventh day it was manifest that the disease had reached its acmé on the previous day. The areola was diminished, the vesicle was more apparent, some of the papulæ presented light straw-coloured summits, and the roseola was declining, with an abatement of the febrile symptoms, and a diminution of the tenderness in the axilla. On the eighth day all these changes were more obvious, although he was not free from headach ; the papulæ were more yellow, and some were desiccating ; the vesicles were larger but less active, and the areola was comparatively pale. This was evidently modified vaccine in a sanguine habit, with roseola and vesicular or vaccine lichen.

I had inserted twenty points, charged from the variolous vesicle, on the tenth day, into five children, making four punctures in the left arm of each child, viz., James Bryant, aged two years, in delicate health, dark complexion ; Ann Nicholson, aged one year, healthy, fat, florid, but phlegmatic ; Henry Gibbs, aged one year and three-quarters, very fair, healthy ; Joseph Woodbridge, aged three years, robust and remarkably florid ; George Woodbridge, aged five months, plump and healthy. In all, the punctures were early inflamed; but the inflammation subsided, and the papular stage was late in all—the sixth, seventh, or eighth day before it was possible to determine the probability of any result, when a dark dull red pimple occupied the place of some of the punctures, for many of them failed. Vesicles with areolæ were formed at different periods in each.

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[1] *Quarterly Journal of the Calcutta Medical and Physical Society*, No. ii., April, 1837. Also *Dr Baron's Life of Jenner*, Vol. ii. ; Appendix.

Bryant, becoming ill with diarrhœa soon after vaccination, produced only one vesicle, with an areola at the height on the fifteenth day; the vesicle bluish and remarkably large. Nicholson yielded two fine vesicles with full areolæ, and two papulæ on the thirteenth day. Gibbs had but one vesicle, fine and pearl-like, with fully developed areola on the eleventh day. Joseph Woodbridge had two vesicles, attended with areola on the tenth day, which were very extensive on the twelfth, and did not decline till the fourteenth day. George Woodbridge entirely failed. Thus twenty punctures yielded but six vesicles. In all these cases the primary constitutional symptoms were very slight; the secondary proportioned to the extent and character of the areola: hence Joseph Woodbridge suffered severely, had vomiting, and delirium. No eruption was observed in any of the cases except his; he had extensive roseola.

On three subjects, aged respectively eleven years, ten months, and two years and a half, some of the remaining points were employed; into these, also, were inserted, at the same time, points charged with ordinary vaccine lymph. In all three subjects the latter took effect in every puncture; while only five out of eight punctures with the new lymph answered, papulation being tardy as before; while the old lymph advanced as usual. As the areolæ of the vesicles from this lymph began to form, the sluggish vesicles from the new began rapidly to advance, and ultimately ran the same course, but did not eventually attain the same size, though perfectly well developed.

Six points, charged with lymph taken from the vaccine vesicle of the fifth day, on the variolated sturk, were inserted into two subjects at the same time as points charged with lymph from the variolous vesicle of the tenth day. One, Emma Churchill, aged five years, produced, from three punctures with the latter, two *papulæ* only; but from three punctures on the right arm, with the former lymph, two very fine active *vesicles*, in which the areolæ began on the ninth day, and was fully developed on the eleventh. In the other case, Richard Tompkins, aged four years, both sets of punctures took effect, but those with the retro-vaccine lymph were more early developed; the areolæ of both commenced on the ninth day, and declined after the eleventh. The symptoms in both subjects appeared on the approach of the areolæ, and were rather severe during its activity. In the subsequent removes of the lymph from the variolous vesicle and the retro-vaccine vesicles, and when propagated from arm to arm, it appeared rather more energetic than the ordinary lymph. Trials were made of both on the same and on separate subjects. In the subsequent removes of the new lymph, in the liquid state, by trials on the same and on different subjects at the same time, it was impossible to discover the slightest difference in its course and effects, whether derived from the variolous vesicle of the tenth day, or the retro-vaccine vesicles of the fifth or seventh day.

Experiment second.—The lymph from this experiment, on the sixth day, was employed on four subjects, viz., Mary Ann Hughes,

aged two years and a half, fat, florid, but flabby and phlegmatic; George Woodbridge, aged five months, (the subject of experiment with the other primary variola vaccine lymph;) Ann Clarke, aged two years, robust, plump, florid, and fretful; James Brown, aged ten months, florid, plump, and healthy. In all these cases, though the punctures early inflamed, there was the same irregular and tardy appearance of the vesicles as above described in the use of the first variola vaccine lymph. In Hughes, papulation was doubtful between the seventh and eighth days; no signs of vesiculation till the tenth day, and then in only two of the punctures. On a dark red hard base the vesicles slowly advanced, and on the twelfth day the areola commenced and continued to augment till the end of the fourteenth day, when full-sized vesicles were perfectly developed, of a bluish white with a greenish centre. Bryce's test, in three punctures with secondary variola vaccine lymph, was employed on the eighth day, and with the usual results—complete and simultaneous development. George Woodbridge again failed.[1] In Clarke there was doubtful papulation on the sixth day in *three* punctures; on the seventh day one appeared slightly vesicular: all were of a deep red, as before described; on the eighth day the summits of all the papulæ were ash-coloured and slightly depressed; on the ninth day deep damask, hard, and elevated papulæ, with ash-coloured summits, scantily supplied with lymph; one was seated on a broad, dark red, elevated base, (as in Joseph Woodbridge's case from the first lymph.) On the twelfth day the areola commenced, and with it an abortive lymphless tubercle in the situation of the remaining puncture. On the fourteenth day the areola declined; but much induration and inflammation continued for several days. In James Brown, on the sixth day, there were two doubtful, dark red papulæ, and two small vesicles on a hard livid base. On the seventh day the two papulæ had subsided, and there were clearer indications of vesiculation, still on a hard livid base; on the eighth day the ash-coloured vesicles were more distinct; base still hard and inflamed. On the tenth day these livid tuberculo-vesicular elevations were as large as peas, and yielded more lymph. On the eleventh day the areola was manifest around them, and both presented the appearance of one of the vesicles in Clarke, and both the vesicles in Woodbridge, on the same day. Pear-like vesicles on a dark red, abrupt, elevated, circumscribed base. On the thirteenth day the areola declined. Here sixteen punctures produced only seven vesicles, and one abortive lymphless tubercle. In these cases, also, the constitutional symptoms were scarcely noticed till the appearance of the areola, and with its increase they augmented, with its decline they disappeared; they were certainly severe. Some of the points, charged on the sixth day from the

[1] Thirteen days afterwards he was successfully vaccinated from Emma Jaycock, page 664, with her (ninth day) variola vaccine lymph. On him it was the *second* remove.

variolated sturk, were inserted into the same subjects at the same time as *liquid* lymph from Emma Churchill. The vesicles resulting from these points, though for a time tardily developed, as above, were ultimately hurried on in their course by the promptness and activity of the *liquid* retro-vaccine lymph, so that on the eleventh day it was not possible to distinguish them, as in the case of Rebecca Walker, for example, aged one year and three-quarters. Points charged with the primary variola vaccine lymph, of the sixth, eighth, ninth, and tenth days, were used on seven more subjects with similar results—failure of some punctures, or more or less tardy or normal development of the vesicles, and all these phenomena occurred irrespective of the age of the lymph, whether of the sixth, eighth, ninth, or tenth days. I shall give two examples—one being the most successful, the other not without interest. Emma Jaycock, aged fourteen, dark swarthy complexion, thin skin, rather florid: two points of sixth-day lymph, and four of eight-day lymph, were inserted into six punctures. Henry Jaycock, aged fourteen (twin brother), dark complexion, thin dusky skin: two points of sixth, two of eighth, and two of tenth-day lymph, were used in six punctures. In Emma Jaycock, on the fifth day, four of the papulæ had ash-coloured summits, and seemed vesicular; two were doubtful. On the seventh day there were five small distinct reddish gray or ash-coloured vesicles, one very small; but I managed to take lymph, and inserted it by five punctures into a younger brother. On the eighth day the vesicles were advancing, of unequal size and irregular form. Here I was forcibly struck with the strong resemblance some of these vesicles bore to those of the eighth day, depicted in Jenner's work, on the arm of Hannah Excell, which he thought so remarkably like the results of small-pox inoculation. My patient stated that she felt slightly indisposed on the fifth and sixth day, that the axilla was painful on the seventh day, and that she was then giddy and sick, but felt worse on this, the eighth day. I charged points and glasses, and vaccinated an infant sister. On the ninth day the areola commenced, and she complained only of headach; on the eleventh day it was fully developed, when all her symptoms returned in an aggravated form. On the twelfth day it declined, but the turgid vesicles having burst the flimsy cuticle, renewed inflammation and induration with circumscribed sloughing and ulceration of the skin ensued, and rather deep scars are now visible. Henry Jaycock, on the fifth day, promised five vesicles for his six punctures; but being an irritable, intractable lad, he completely destroyed them with his nails, so that they were never properly developed. Subsequent vaccination, however, has been unsuccessful.[1] By this time I had suc-

[1] The *permanency* of the vaccine influence in this and in those cases mentioned by M. Bousquet, (*Traité de la Vaccine*), where the incipient vesicles were destroyed by caustic, doubtless will be questioned by many. That the integrity of the vesicles is not essential to the production of the constitutional and preservative influence has been assumed from the experiments of that gentleman, and analogous cases to this now related. I have certainly met with not less than

ceeded in propagating, with the second remove of the first variola vaccine lymph, the retro-vaccine lymph from the same sturk, and the variola vaccine, sixth-day lymph, from the animal in the second experiment; and, desirous of comparing their character and effects, I selected a tractable though not a good subject, as regarded skin, for this purpose. Hannah Rogers, aged twenty-six, robust, florid, dark but thin skin, and inserted into six punctures, on her broad fleshy arm, lymph of the sixth day, from Rebecca Walker, and lymph from James Brown, of the sixth and eighth day, second remove, of second variola vaccine. In each puncture two points, well charged with each lymph, respectively, were inserted and carefully retained.[1] On the ninth day nothing could be more uniform than the appearance of all the vesicles when the areola commenced; that uniformity they maintained throughout. On the eleventh day the areola declined, when the vesicles exhibited a remarkably blue tint, which increased till the thirteenth day, and was equal in this respect to any I ever saw in the casual cow-pox on the hands of the milkers. The primary symptoms were slight on the fifth and sixth days, but acknowledged; her chief indisposition arose on the ninth day; severe headach, nausea, and general pain. The same identity of external character and general effects appearing in other trials, and believing it useless, and finding it inconvenient to keep up three stocks of lymph, I ceased to propagate from the two first after the fourth remove, when the vesicles were every thing that could be desired, even on a puny, sickly, rickety child, aged two years and a half.[2] I then confined

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ten such cases, in which, at various periods, from fourteen to eighteen years afterwards, I have been unsuccessful in re-vaccinating. But this does not appear to be always the case. Out of thirty-five cases of ruptured vesicles, at the Nottingham Vaccine Institution, (*Medical and Physical Journal*, vol. xvi., page 137), three passed through the regular vaccine three or four months subsequently. If, as Jenner contended, the *primary* are the *essential* symptoms, then the integrity of the vesicle and the development of the areola are desirable only as probable indications of a fact which Bryce's test alone declares. I have met with seven or eight cases where the vesicles have been imperfectly developed, and where subsequent re-vaccination; after the same length of time, has been still less imperfect; but in one of these, who did not appear, as desired, for re-vaccination, a severe attack of small-pox occurred ten years afterwards. One of the above cases has been exposed to small-pox by inoculation once, and repeatedly to infection, without effect. Four patients, in one family, were vaccinated sixteen years ago by me; they had small vesicles prematurely formed, areolæ on the sixth day, which was extensive, and terminated on the eighth. All were indisposed, and have resisted re-vaccination to this very day. I have met with similar cases in other individuals, attended with similar results.

[1] In all our experiments, doubtless, much must be allowed for the use of dry lymph, particularly in the use of that which is imperfectly assimilated. Here I thought two well charged points to each wound would be more prompt than one.

[2] How often do we observe that those subjects from whom we expect the least, yield the most. Some of the finest vesicles I ever saw have been on rickety children not actually indisposed at the time. It is not the health and temperament alone of the subject, but the condition and quality of the dermic tissue that determines the development of the vesicle, and hence we never can predict beforehand the character of the vesicle without attention to this particular.

myself to the stock derived from Emma Jaycock. Her brother, Lewis Jaycock, aged twelve, was vaccinated from her vesicles on the seventh day; he had a dark dusky complexion, and very thin skin, and was not so florid. He exhibited papulæ in every puncture on the fourth day, all of which were vesiculated on the fifth, on the evening of which day his axilla was sore; he felt headach, was giddy and sick. On the sixth day all these symptoms had rather increased, the vesicles were advancing; thirty-eight points were charged, and two children vaccinated from him, and he was re-vaccinated with his own lymph. On the seventh day he was in all respects better; vesicles advancing; took thirty-eight points and vaccinated a child. On the eighth day the areola commenced, and the *test* vesicles were forming. On the ninth areola pretty extensive, though pale, from the character of his skin, when headach, &c., returned. On the tenth areola increased, but only two vesicles were entire; the rest spontaneously burst or were rubbed; still complains. On the eleventh day they were nearly all destroyed. Here the vesicles were remarkably small, but not so on the subjects vaccinated from him; on the three children, (two infants), all healthy and robust, with thick skins, nothing could be more satisfactory than the character of the vesicles, and the evidence of constitutional affection. As an example, I select the case of — Adock, an infant four months old, vaccinated by Mr J. H. Ceely, and consequently the third remove from the variolated sturk. Fretfulness and indisposition were manifest on the sixth and seventh day; but the active symptoms arose with the areola, which, at its height, had a bright damask hue. The vesicles were equal to any I ever saw, on similar subjects, from the early removes of primary lymph, and were not completely desiccated till the eighteenth day. The fourth remove to an infant four months old, with a plump, tense, thick skin, the vesicles were equally fine in all respects. From this was vaccinated — Slaughter, aged eleven months, where on the fifth, sixth, and seventh days, slight indisposition was manifest; but on the eighth, when the areola commenced, smart symptoms of fever were present, which continued to the tenth, when it declined. Nothing could be more satisfactory or gratifying than the progress now made, which it would be needless further to detail; I shall therefore abstain from the description of individual cases, after adducing one example from the fourteenth remove, as a type of what might be produced in similar subjects, viz., an infant fourteen months old, florid, plump, and healthy, with a fine, clear, thick, smooth skin.

In the majority of instances, in propagating from arm to arm, distinct papulation was apparent on the second day; on the third it was not only visible, but elevated and well defined; on the fifth and sixth, vesiculation was abundantly obvious, and lymph was often taken on those days; on the seventh day vaccination was frequently performed, and points were often charged; on the eighth the vesicle

commonly exhibited a bold, firm, and glistening aspect;[1] between this period and the ninth day the areola generally commenced; (but in young infants, with tense and sanguine skins, it appeared *early* on the eighth); by the tenth day the vesicle was commonly in its greatest beauty and highest brilliancy, glistening with the lustre of silver or pearl, having the translucency and appearance of crystal, or shining with a pale blue tint, occasionally of a dull white or cream colour, bold and elevated, with a narrow centre and broad margin, or flat and broad in the centre with an acute margin, occasionally not raised above the level of the skin; on this and the eleventh day an extended and generally vivid areola existed, with more or less tension and induration on the integuments; at this time the lymph was frequently pellucid, and often perfectly efficient. From the eleventh to the thirteenth day, gradually increasing; in many individuals, both children and adults, sometimes the entire vesicle, at others only the central parts, reflected a blue or slate-coloured tint from the congested or ecchymosed subjacent adventitious structures, proportioned to the texture and degree of translucency yielded by its desiccating epidermis. On the thirteenth and fourteenth day, particularly on clear skins, moderately thick, the vesicles attained a considerable size, measuring often in their longest diameters six and a half or seven lines, and acquired a light-brown centre, from commencing desiccation, which was surrounded with an outer margin of dull white or pale dirty yellow, soft and flaccid, and still possessing fluid contents. During this period the areola, of a dull red or damask hue, would revive and decline again and again, and even to the sixteenth or eighteenth day, the period to which complete desiccation was frequently protracted. The crust commonly partook of the form of the vesicle; it was often prominent and bold, varying in colour from that of chesnut to that of a tamarind stone. It fell generally about the twenty-third or twenty-fifth day, often later.

The cicatrices were of variable depth and extent. When the vesicles remained unbroken on a thick sanguine skin, they were deep; but on a thin skin, shallow; they were not always proportioned in width to that of the vesicle, the smallest cicatrix often succeeding the largest vesicle; but the later the crust fell, of course the deeper the cicatrix, which on these occasions was often beautifully striated.[2] I need scarcely say that where the vesicles were accidentally broken, or spontaneously burst, much mischief ensued, deep sloughing of the skin, &c., &c. Spontaneous bursting did not often occur, except in those subjects possessing the before-mentioned and well-known obnoxious constitutional and dermic characteristics, upon whom we must always use active lymph with some risk.

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[1] Although on this day most vesicles were abundantly yielding, many well-formed vesicles afforded an inconvenient and scanty supply till the ninth day.

[2] Inspection of many scars, caused by this lymph, shows that in a few months little is to be learned in many subjects, with thin skins, of the degree to which the vaccine influence has been exerted on them.

When the lymph in the first remove produced normal vesicles, and as soon as it had passed readily from arm to arm, the constitutional symptoms, though mild, were most commonly well marked. In infants, restlessness, fretfulness, and inappetency, about the fifth or sixth day, were very common; sometimes as late as the seventh day; very few escaped feverish symptoms on the ninth and tenth days; many had vomiting and diarrhœa. From childhood up to puberty, the primary symptoms, from the fifth to the seventh day, were unequivocally visible, and often complained of; fever, vomiting, delirium, and diarrhœa, were not unfrequently witnessed at the commencement or during the progress of the secondary symptoms. In adults, of course, more complaint was made; headach, chilliness, anorexia, and sometimes thirst, on the fifth or sixth day, increased on the seventh day, with axillary tenderness; but on the ninth and tenth days much general febrile complaint, disinclination, and even inability to leave the bed. But in several instances amongst young children little or no complaint was made or indicated. All the members of the same family, vaccinated from the same source, might be differently affected. One, for instance, would not cease from pastime, occupation, or meals, while another, particularly if older, would be indisposed several days. Neither the number nor the magnitude of the vesicles seemed to determine the amount of the primary disturbance. If properly developed, small vesicles often gave rise to marked constitutional symptoms; and the most splendid vesicles were often seen with trivial, sometimes scarcely appreciable disturbance.

The secondary symptoms were often as active with three or four as with six or eight vesicles. Acceleration of the pulse was frequently noticed when no other symptoms appeared. Both primary and secondary symptoms very commonly showed a remitting type.

Eruptions.—This most important part of the effects of the lymph of both experiments, as before stated, engaged my particular attention. In no adults, except in the case of my assistant, Mr Taylor,[1]

[1] Page 661.—This case affords another illustration of the susceptibility of many persons to a form of the vaccine, who would resist small-pox; Mr Taylor having been exposed for hours, a fortnight before this event, to the infection of small-pox, while assisting me in charging points and glasses with variolous lymph. Subsequently to this I vaccinated myself with the variola vaccine lymph; had three modified vesicles, with extensive areolæ, and slight secondary symptoms. I had casual small-pox very mild in childhood. Perfect vaccine I have seen after malignant variola, with petechiæ. The following cases are curious; they were under my own care, and were vaccinated at the fortieth remove of the lymph of the second experiment. A male child, aged two years, very fair, born eight weeks after his mother's recovery from a dangerous attack of small-pox sixteen years after vaccination, and at birth covered with a multitude of shrivelled variolous pustules, the marks of which were long in disappearing, was vaccinated in December last, and yielded perfect vaccine vesicles, and one supernumerary vesicle, with the usual symptoms; from him I vaccinated a female child, aged five years, whose mother had been affected with mild casual variola four months before her birth, at which time she exhibited no marks. Here the vaccination was modified, the areola appearing on the seventh day, and subsiding

was there any attendant eruption; nor in any child the slightest approach to any thing of a varioloid character. Roseola, strophulus, lichen, were the principal eruptions.

The papular eruptions, as observed by Jenner, frequently became vesicular. In a robust infant, aged six months, vaccinated at the sixth remove from the second experiment, at the incursion of the primary symptoms, an eruption of strophulus volaticus appeared of unusual severity, attended with much constitutional disturbance. The summits, both of the solitary and clustered papulæ, were vesiculated to an extraordinary degree; and the eruption being so thickly strewed on the face and body, I found it difficult to convince the parents, their friends, and neighbours, that it was not small-pox. It disappeared and reappeared for three weeks. The other species of strophulus, particularly albidus, often assumed the same character as did those of lichen. In a few instances a vesicular eruption of a pemphigoid character, either in large bullæ or closely resembling lenticular varicellæ, was observed, both in a solitary and in a grouped form. This seems to me to be strictly a vaccine eruption. It is seen on the cow, and often on young dogs, during or after the secondary vaccine symptoms. It will subside in a few days, or continue for some weeks in children.[1] In one case actual varicella appeared on an infant, aged fifteen months, six days after vaccination at the sixth remove. The vaccine vesicles became suddenly flattened, and the disease was impeded for two days.[2]

Supernumerary vaccine vesicles were often met with in near or distant proximity to the seat of vaccination, from the practice of free incisions and a liberal allowance of lymph;[3] but small *eruptive* supernumerary vesicles were observed in several cases at the period of full development of the areolæ, and within its sphere, when *points only* were used. In one case a vesicle appeared on the shoulder, and one on the neck. In two other cases two vesicles appeared on the abdomen, all during the early removes of both stocks of lymph.

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on the ninth. An infant vaccinated at the same time showed perfect vaccination from the first subject. But I have known such cases as the above male child resist variolous inoculation; and others are stated to have been equally insusceptible of the vaccine.—Vide *Bousquet Traité de la Vaccine*, page 51.

[1] Vide page 537; also, *Willan on Vaccine Inoculation*, Appendix, No. vii.

[2] I failed in my attempts on several eligible subjects to inoculate with the pellucid lymph of these varicellous vesicles. The disease was prevailing in the village at the time; and two children of the same family, from one of which this infant was vaccinated, became infected with varicella, soon after the infant recovered. This disease, called in Buckinghamshire "the blisters," is continually met with, both sporadically and epidemically, without any connection with variola. I have often seen it not only after small-pox, but soon after vaccination, and in one instance a month after direct vaccination from the cow. Dr Thomson has shown that variola assumes a *varicelloid* character; but it does not appear to me that he has succeeded in disproving the distinct and independent nature of varicella.

[3] Vide page 535, note.

The effects of the lymph have been well observed at Cheltenham, where it has been extensively used[1] by Mr Coles and many other surgeons. It was in use many months at the Small-pox and Vaccination Hospital in London; and has been attentively observed at Bristol by Mr Estlin;[2] also at the Cow-pox Institution of Dublin;[3] and by many private practitioners.

GENERAL OBSERVATIONS.

In the transfer of the above lymph from the animals to man, my attention was forcibly arrested by the difficulties attending the process; and in the entire failure of so many punctures, the production of so many lymphless papulæ, and the formation of so few perfect vesicles, I recognised phenomena so common in similar trials with primary lymph.[4] In some instances the difficulties were not completely overcome even in the second removes. The marked improvement, in subsequent removes, in the development of the vesicles, and the active manifestation of the primary and secondary symptoms, were not less apparent than in the use of natural lymph under corresponding circumstances, except that in very few instances, and those principally in later removes and in peculiar subjects, there was not observed that disagreeable, inconvenient, and mischievous acrimony so peculiar to the former lymph. The lymph from the vaccine vesicles on the first experiment seemed to have acquired activity without causing the same amount of difficulty in its transmission.

These experiments with the variola vaccine lymph on man, show the necessity of having a number of subjects of different temperaments on which to employ it, on its first removes, to ensure success. It seems highly probable, too, that the direct transmission of the liquid lymph from the animal to children will save much trouble and conduce to greater success.

It has been justly observed by Dr Adams,[5] "that diseases in one class of animals, when communicated to another, seem to alter many of their properties;" and no more appropriate illustration can be adduced than the *vaccine modification of variola.* The wonderful sagacity of Jenner taught him first to believe and announce the important fact of the affinity between vaccine and human variola; and through the brilliancy of his genius, his unwearied industry, and boundless philanthrophy, it has been made subservient to the welfare of mankind. Hence the fact in question proves deeply interesting to

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[1] Vide *Report of the Vaccination Section of the Provincial Medical and Surgical Association*, page 25.

[2] *Medical Gazette*, December 27, 1839.

[3] Vide *Report.*

[4] Vide page 545.

[5] *Observations on Morbid Poisons*, page 51.

all. But the physiologist cannot fail to desire some knowledge of the probable causes of such remarkable modification. In the prosecution of inquiries of so interesting and comprehensive a nature, of course he will not confine himself to the physiology and pathology of the cow; but, in considering the structure of this animal, and its functions in health and in disease, his attention is arrested by many remarkable peculiarities. The abundance of its cellular and adipose tissue, its low vital energies, its sluggish habits, the tendency of its diseases to pass into the chronic state, the difficulty of exciting suppuration in an abscess and in setons, clearly evince the antiphlogistic and lymphatic temperament.[1] Hence the insidious nature of many of its maladies, and their tendency to pass under favourable circumstances into the adynamic state. The well-known proneness of this class of animals to carbuncular, gangrenous, epizootic, and enzootic typhoid diseases, will greatly diminish therefore our surprise at the fact of their liability, in certain situations and under certain circumstances, to malignant vaccine, and even to variola. It would ill become me to do more than allude to this highly interesting subject, and point attention to the valuable records of such facts which are accessible to all.[2] I shall therefore conclude my remarks by an extract from an interesting paper in the *Veterinarian*,[3] of Professor Dick, of Edinburgh, on Chronic Tumors in Cattle:—"I may here remark, that there is in cattle a strong tendency to this form of disease, under every circumstance in which a part is either inflamed from internal derangement or external injury. There is in fact, it appears, a constitutional weakness in cattle, from which their diseases have a strong tendency either to run rapidly into putridity, or to sink into the chronic form of the disease now in question. The constitution of their blood has a tendency to lead to this supposition; for in cattle there never is to be found, so far as I have seen, that separation of the constituent parts by which what is termed the *buffy coat* is made to appear."

NOTE.—The unavoidable delay in the appearance of this paper, from the time required for the colouring of so many engravings, affords me the opportunity of stating that I have been unsuccessful

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[1] *Je puis errer, mais il me semble que, comme je viens de la dire, l'abondance des tissus cellulaire et graisseux, l'energie vitale toujours moindre, toutes choses égales d'ailleurs, dans le beuf que dans le cheval, les habitudes lentes de cet animal, la tendance qu'ont ses maladies à passer à l'état chronique, la difficulté qu'éprouve la suppuration à s'établir dans les abcès, les sétons, démontrent évidemment l'association de la prédominance plus ou moins marquée du système lymphatique sur l'appareil vasculaire sanguin, et prouve l'existence du tempérament mixte que je viens de signaler.—Pathologie Bovine, par P. R. Gellé.*

[2] *Dr Baron's Life of Jenner*, vols. i. and ii.; *Quarterly Journal of the Medical and Physical Society of Calcutta*, No. ii., April 19, 1837; *Report of the Vaccination Section of the Provincial Medical and Surgical Association;* and *Asiatic Journal*, December 1839.

[3] June, 1839.

in my endeavours to ascertain the mode of operating pursued by Gassner, in his successful experiments in variolating the cow, performed in 1807;[1] a circumstance with which I was unacquainted till some time after the success of my own.[2] This is much to be regretted; but I am gratified to learn that, since the announcement of those which I have just detailed, intelligence has been received of the success of Dr Basil Thiele, of Kasan, in South Russia, in similar experiments. He appears to have been successful in 1836, at a time when I was fruitlessly engaged in endeavours to make arrangements for experiment. In 1838 he was again successful, and appears to have matured a plan upon which he relies for success. He selects milch cows, and performs the operation, in spring, on the udder, maintaining in the stable the temperature of 66° Fahrenheit. *Few* vesicles result from *many* punctures; and he rejects the animals on which I have chanced to succeed. But I must refer to the notice of his experiments, and a detail of his method, in the work alluded to.[3] I cordially congratulate Dr Basil Thiele on his success, and consider his method both rational and ingenious, and well calculated to accomplish the object.

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[1] *British and Foreign Medical Review*, January, 1840.

[2] It also enables me to state that, by means of the great advantages arising out of the circumstances alluded to at page 669, more than two thousand subjects have been vaccinated with the variola-vaccine lymph; and through more than sixty removes, under my own eye, it maintains the general character which I have described.

[3] *British and Foreign Medical Review.*

EDINBURGH VETERINARY REVIEW

AND

Annals of Comparative Pathology.

PROTECTION FROM QUACKS.

Our opinion has not changed. The title 'Veterinary Surgeon' should be restricted, as it certainly is not now, to duly qualified members of the profession, and, if possible, such a name as 'Veterinary Forge,' kept by a blacksmith, should be suppressed. The public is entitled to a clearer distinction than it has at present between qualified and unqualified men, and the profession should not labour under the disadvantage of having numbered amongst its members every rough who is cunning enough to have a handsome brass plate on his door on which he styles himself veterinary surgeon. We admit that knowledge alone can elevate to their proper position the members of any profession; but as the public is too easily imposed upon, every reasonable means should be adopted to prevent such imposition. It is due to the public no less than to the body of qualified veterinarians.

Is the Medical Act of any service? Its necessity was long insisted upon, and though it cannot abolish quackery, though it may fall far short of the expectations of many, yet it affords the protection to qualified medical men, which we wish were granted to the veterinary surgeon. There are doubtless difficulties in the way of obtaining an Act of Parliament. It is always a difficult matter to accomplish great and useful reforms, but the prize in prospect is worthy of the devotion of time, labour, and money. We doubt not that there are those amongst us to continue agitating the question, who will lead the way and furnish the sinews of war.

By the time this article will meet the eye of our readers, Mr Ernes will have fought one of the battles necessary for the end in view, at a meeting of the Council of the Royal College of Veterinary Surgeons. We have learned to entertain a sincere respect for all that Mr Ernes says and does. He not only means well, but acts with that independence and determination which we would wish to see in all. His experience as one who has long held a prominent position in the

profession, will keep him from false steps which might peril the undertaking, and his suggestions will, we have no doubt, meet with an impartial consideration at all hands.

We shall support every measure calculated to advance the interests of the veterinary practitioner. Ours is no dog-in-the-manger policy, and whoever initiates or assists the working of a scheme in any way advantageous to the veterinary profession, will find his services in the good cause duly acknowledged in these pages.

PROPOSED IRISH VETERINARY COLLEGE.

We have to draw the attention of our readers to the report of a meeting to consider the means to be adopted for the establishment of a Veterinary College in Dublin, and which seems to have been on the whole a very successful one. Professor Cameron, who is the active man in the arduous undertaking, deserves the most unqualified praise for his persistent efforts during many months, and in the face of much and meaningless opposition. He has cleared the way of the first great obstacle which presented itself in the shape of a second scheme backed or started by the Royal Dublin Society. He has now to get money and men. So far as money is concerned, we think that Ireland, poor as she is, may afford twice or thrice six thousand pounds for the objects for which the sum is sought; but in establishing a Veterinary College, the money question is, in our opinion, second to that of how shall competent teachers be secured? We may be told that money provides everything, and, with good pay, the services of able men will be secured. But it is no secret that Veterinary Colleges have never encouraged the education of young teachers. There have been no house surgeons, assistants, demonstrators, &c., who by residing in a college for several years, have gradually trained themselves to the very difficult duty of communicating knowledge to the uninitiated. It has only been within the last five years in Edinburgh that any satisfactory steps in this direction have been taken, and no less than five new teachers have been appointed. Another two or three years will bring out some talent which would never have been available on the old system, of turning men adrift after ten months' attendance at lectures and a hurried cramming for examination.

We unhesitatingly say, that if any person is chosen to superintend the school, or undertake the duties of lecturer, who has not been

trained on a very different system to that adopted by the old colleges, the Irish College will soon be at an end. Failure would be such a terrible disappointment and really such a misfortune, that we advise Professor Cameron and his coadjutors to be extremely cautious as to who shall be appointed on the staff of instructors.

We think the system of competition offers some scope; and by the summer of 1862, we could promise some worthy applicants. It will, however, be found that a trial is essential, as there is the danger of being committed to an individual or individuals whose personal qualities, apart from professional acquirements, might prove fatal to an Institution in its infancy, which will tax the patience and endurance even of Professor Cameron.

We trust that one more word of advice, given with the most friendly intentions, may be received as it is meant. The leaders in the movement must act with great care, and not commit themselves to support any one for offices in prospect, until plans are more mature. The danger of a pledge is incalculable, and the advantages of free independent action too great to be sacrificed at any cost.

PERISCOPE.

THE VETERINARY COLLEGE OF IRELAND.

(From the Dublin Weekly Agricultural Review.)

A PUBLIC meeting was held on Thursday, Oct. 17, at three o'clock, in the Oak-room of the Mansion House, for the purpose of adopting the best means for aiding in the establishment, in Dublin, of a Veterinary College.

The Right Hon. the Lord Mayor occupied the Chair.

There were present, amongst others:—Lord Talbot de Malahide, the Hon. John P. Vereker, the Hon. R. G. Talbot, Captain Thornhill, J.P.; Dr Hans Irvine, Captain L. E. Knox, J. Harold Barry, J.P.; J. C. Joseph, T.C.; Thomas Shea, V.S.; M. Small, V.S.; Dr Wilde, E. Reynolds, D. C. Macnish, A. Balfe, D. Rogerson, Thomas Baldwin, Colonel O'Neill, G. Flood, solicitor; Henry Price, J.P. and T.C.; Edward Purdon, Richard Hogan, — Martin, V.S.; Professor Wilkinson, T. Boyer, Phineas Riall, J.P.; Hugh Ferguson, V.S.; H. J. MacFarlane, J.P; Dr Ringland, Major Brennan, John Sproule, C. B. Johnston, Dr Hayden, Martin Merce, V.S., 15th Hussars; P. M'Evoy Gartlan, E. H. Casey, D.L.; P. O'Brien, Captain Norton, Dr Cameron, &c., &c.

The following letters were read, along with others:—

"*Garbally, October* 16, 1861.

SIR,—Lord Clancarty, being very far from well, and unable to write, has begged of me to say that he is sorry he will not be able to attend the meeting for the promotion of the Veterinary College in Dublin, on Thursday the 17th. The meeting has his best wishes, and he trusts it will be a successful one.—I have the honour to be your obedient servant,

"A. S. P. TRENCH.

"Charles A. Cameron, Esq."

"*Glassnevin, Wednesday Night.*

My dear Doctor,—I regret that pressing business matters oblige me to leave home on to-morrow morning, and that I cannot, therefore, give an humble helping hand by attending the meeting of the eterinary College. I need scarcely *re*-assure you that the establishment of a Veterinary College, which is a grievous want in this country, shall have my hearty co-operation in any way I can give it.

"You are aware that, on my suggestion, the Commissioners of National Education made Veterinary Science a subject in the course of instruction which is imparted to the pupils of the Albert National Agricultural Institution; and I am happy to say, that I have had numerous proofs of this *necessarily limited* course of instruction on this important branch of an agriculturist's profession, having done much good in disseminating correct information on the proper management of live stock, both in health and disease, and also in eradicating some of the most barbarous practices which could well be imagined. If, then, such an humble agency has effected much good, what invaluable results may not confidently be looked for from a Veterinary College, with its appliances!—Ever yours, sincerely,

"Dr Cameron, &c., &c." "Thomas Kirkpatrick.

Dr Charles A. Cameron said—My Lord Mayor, as the Honorary Secretary to the Committee of the Veterinary College, I feel it necessary that I should make a few remarks, explanatory of the origin of this movement. (Hear, hear.) The idea of establishing a Veterinary College in Ireland is not a new one. Several attempts have been made, from time to time, but from various causes these attempts resulted in failure. The present movement originated in a meeting of some gentlemen held more than twelve months ago. It was then resolved that a Veterinary College should be established, and it was agreed that I should visit the Veterinary Colleges on the other side of the Channel, and by making myself acquainted with their working, ascertain whether a similar institution might not be established here. The result of my examination was, that I returned to Dublin convinced that it would be an easy matter to carry out the project; for, while in Scotland there are only 160,000 horses, the number here amounts to about 600,000. In Edinburgh there are two colleges, having on their lists nearly 200 students; in London there is a magnificent college, founded more than half a century ago; and why should Ireland, not less interested than either of the sister countries in the sanitary condition of the domestic animals, be without *its* Veterinary College? When this project was fairly started, and that matters were going on very well, it occurred to the Royal Dublin Society that they had a lectureship in veterinary medicine some 30 or 40 years ago, and some of the members suggested that there should be a Veterinary College established in connexion with their society. I think, however, that at that time very few of the members were aware that a movement was on foot with the very same object in view. When it was known to them, they quickly retreated from the position they had taken, and they stated that not only was it unnecessary to found an institution in connexion with the Royal Dublin Society, but that they were willing to give all the support they could to any establishment extern to the society. (Hear, hear.) Under these circumstances, therefore, the committee requested your lordship to preside at this, the first public meeting held to consider the subject of founding this institution. The committee have decided that £6,000 will be amply sufficient for the founding of an institution which will be in every way worthy of the country. (Hear.) Originally it was intended to raise the necessary sum by subscriptions, but on Lord Talbot's suggestion, it was subsequently settled that a limited liability company should be formed. At first, shares were fixed at £5, but, in order to have a more general list, the shares were lowered to £1, and stand so now. (Applause.)

Lord Talbot de Malahide moved the first resolution, as follows:—

"That, as there are three Veterinary Colleges in England and Scotland, the establishment of a similar institution in Dublin is imperatively required, as no country is more interested than Ireland in the sanitary condition of the domestic animals."

His Lordship said he had great pleasure in proposing the resolution, which amounted, he thought, almost to a truism. It required only a very superficial knowledge of the country, to be aware that a large number of experienced practitioners were absolutely required, and that there were not the means of educating them properly at present afforded. It was also a matter self-evident that a country like Ireland—a country, he might say, prominent for its ability and distinction, in which it has taken ground in the other branches of the medical profession, that they should be able to support a veterinary institution, and to educate a class fully capable to attend to the diseases and the wants of the domestic animals. They were all aware of the great number, of the great excellence, and of the progressive improvement of the domestic animals in Ireland. There was no country on the face of the globe in which a finer race of cattle—and he might add of sheep—could be found than in Ireland. And it was incumbent on all of them to do what they could, in order to maintain the perfection of those races, and if possible to increate it. They all knew of the great reputation which Ireland had always maintained, and he trusted that she was not going to retreat into the back-ground in the breeding and training of excellent horses. From all agricultural operations, it appeared to him there was none in which there was a greater opening for those who understood the subject than in the breeding of horses. The number of horses that could be bred in the country should be limited, and every day demanded more excellence, horses increasing with the increase of the population, of the worth of their manufactures, and, he might almost say, with the increase, which was sometimes imperatively called for, of their military armaments. (Hear, hear.) Ireland was well adapted for the production of good specimens of the horse, and he believed nothing was more essential in carrying on this movement in a proper manner than having a sufficiency of medical assistance. The pig was also a domestic animal which required the care of the vete rinary surgeon. This, like ourselves, was subject to diseases, and in some respects nearly allied to those which afflict the human frame. They should all be anxious, as far as possible, to promote the health of that valuable animal, which was, on so many occasions, he might almost say, the bosom friend of the Irishman. (A laugh.) He considered he had stated the importance of establishing an Irish Veterinary College. He had adduced some reasons from the state of Ireland, and he had attempted in some degree to excite their pride, in order to place the country in a position equal to that of the sister countries. The only question was this—was the matter practicable? His friend, Dr Cameron, had given them a history of the present movement, and he had correctly stated that, at the Royal Dublin Society, there was originally a lectureship in veterinary medicine—an office which was held at one time by a very distinguished gentleman in the veterinary profession, Mr Peale. However, the matter had been allowed to drop, and he feared there was no chance of the Royal Dublin Society having the means at their disposal of giving this experiment a fair opportunity of succeeding. If it had been in their power to do so, he should honestly confess that he felt so bound to the Society—of which he had the honour of being one of the vice-presidents—that he, for one, would be anxious in every way to enable it to keep as high a position as possible; and in assisting in this project they would only be carrying out the principles that always directed them, of endeavouring to benefit the country. However, he felt that there were so many objects which the Society had in view that it was perfectly impossible, with their limited means, to add this other object with any chance of carrying it out successfully. There had been considerable discussion amongst them during the past twelve months as to whether it would be possible to resuscitate the lectureship, and to establish a school of medicine, and the conclusion arrived at was, that it would be perfectly impossible to do so. Feeling it was not in their power to give assistance, they, however, were determined not to throw the slightest impediment in the way of those who were willing to advance it. He felt satisfied there was not a single member of the Royal Dublin Society who was disposed to do so. He did not mean to underrate the difficulties of establishing this college, but he was convinced that those difficulties would not arise from

any private interests. He was sure that amongst those gentlemen who were so distinguished for veterinary practice there was not one who would not give every assistance in order to promote this great object. (Hear.) The difficulty was as to how the funds would be raised. He felt reassured, however, when he remembered that Dr Cameron had stated L.6000 would be sufficient for the purpose, and that there would be no difficulty in getting that amount. It would be a strange thing, considering the wealth of Dublin, if this sum was not speedily placed at their disposal. (Hear, hear.) There was one suggestion which, he was certain, would enlist the sympathies of many. It was that, after having provided for the thorough scientific education, as well as practical, of those who were to embrace the profession, there should be a class for an inferior order of graduates —that there should be means of giving a sufficient education to those who were to attend the animals in their stalls; such information, in fact, as the midwife obtained at the hospital. The teaching of the herds would be very important, in order to enable them to attend their cattle with success in ordinary cases. (Hear, hear, and applause.)

Dr Wilde seconded the resolution. He said he felt great pleasure in attending any meeting convened by the Lord Mayor, for no one had ever filled the civic chair of the Irish metropolis with more credit to himself and more advantage to the public. (Hear, hear, and applause.) To very few men, indeed, had been allotted the high honour of twice filling that chair; and upon both occasions it was his lordship's privilege, and he was sure his pleasure, to hospitably receive, and generously entertain the two most distinguished scientific associations of these kingdoms—the British Association on the former, and the Association for Social Science on the latter occasion. And now, when his lordship's year of office was drawing to its close, he could add to these laurels what he would carry to his domestic hearth, that he had this day assisted in the inauguration of the Veterinary College of Ireland. (Hear, hear, and applause.) He (Dr Wilde) considered it a great privilege, indeed, to second any resolution propounded by the noble lord who had just addressed them, for no social scheme connected either with science or literature or the arts had ever been promulgated in that city, intended for the welfare of the Irish metropolis or the country at large, for many years past, with which the name of Lord Talbot de Malahide had not been intimately associated. (Applause.) And although his lordship's demesne was absolutely without the municipal boundary, he thought they might fairly claim him as their metropolitan nobleman; and he was sure that the circumstance of his having taken a part in the establishment of that college would largely conduce to render effective an institution of which the necessity had been so ably brought before them by his lordship. He (Dr Wilde) might say that he had not been pressed suddenly, or to serve a friend, into the service of this meeting or of this institution. If he had not the honour of an acquaintance, still he had long been familiar with the writings, and was well acquainted with the zeal, energy, and talent, of their secretary, Dr Cameron. He had asked him to take a part in this movement, and it was a subject which, from long acquaintance, did not require much study. Any one who, like himself, was reared in one of the great cattle counties of the western districts of this kingdom, must have been acquainted with the remarkable degree of ignorance and superstition that had always prevailed with respect to the diseases of the lower animals. Who had not seen the practice of the cow-doctor? Ireland was the great emporium of animal food for the United Kingdom, and, therefore, the proper treatment of cattle was a matter of the greatest importance to them. (Hear, hear.) By *pleuro-pneumonia* thousands of heads of cattle had been lost, and this was a disease not understood. The only thing to be done was to provide a larger number of veterinary surgeons, properly educated, and the best way to do that was to establish such a college as Dr Cameron had mentioned. (Hear, hear.) He was sure when that was founded many medical students would take advantage of the opportunity of studying comparative pathology, as well as comparative anatomy. (Hear, hear.) He fully concurred in the remarks as to educating the herds in the elements of the sanitary condition of the cattle. Who is there amongst us who has ever seen a farrier examining or operating on

a horse, or a cow-doctor (such as was this very year caricatured in our art exhibition) searching for an elf-dart or fairy arrow under the skin of an animal labouring under the murrain or the blackleg, and when he had juggled one out of his sleeve, and boiled it with some rap half-pence in drink for the suffering creature, but must have regretted not merely that such ignorance and popular superstition should prevail in any civilised country in the middle of the nineteenth century, but also that the property of the poor and the rich should be entrusted to such imposture. Now, my lord, I stated that Ireland was the great emporium for the animal food of the United Kingdom. Such, from its position and the nature of its soil and climate, it was always intended by a wise and beneficent Providence to be, and to that first and legitimate object it is fast returning; and allow me to say that to this return, no matter from what cause, we may attribute much of our present prosperity. But, while this island is so peculiarly suited to the rearing and fattening of cattle and the breeding of horses, it has also been, from the very earliest times, subject to the most dire pestilence, affecting both man and beast, that any country in north-western Europe has been subjected to. In consequence of the paucity of population, the universal improvement in the dwellings, food, and clothing of the people, the general drainage of the country, the opening up of distant districts by railway, the establishment of poor laws and hospitals, the great advance of medical science, and the sanitary regulations in our cities and large towns (including the improved water supply to the metropolis, with which your lordship's name is also connected), I fear not to prophesy that we can never again witness such scenes as those produced by the great famine and pestilential period which we have so recently passed through. But while plague and pestilence may, by the effects of a good government, and those other influences to which I have alluded, be kept from desolating the poor man's dwelling and be driven from the rich man's door, the pleuro-pneumonia, and other epizootics, against which no national precautions have yet been taken, will, I fear, re-appear, and tend largely to decrease our national wealth. (Hear.) My attention was specially turned to this subject at the period of the recent famine, and at my own expense I issued a circular, requesting, among other matters, information on the subject of cattle mortality and diseases, the answers to which I have embodied in a report, published in a medical periodical of which I was then editor. Not content with that, I induced the Government to allow me to make further inquiries under the Census Act of 1851, and I have reported on the results in this Blue Book, from which I will take the liberty of making a few extracts :—"In Ireland we have notices of epizootics recorded in the very earliest histories ; and from the pre-Christian period, down to the present time, no century has elapsed without frequent invasions of cattle diseases. There has been scarcely a domestic or a wild animal in Ireland that has not in its turn suffered from pestilence—even bees did not escape ; and the coincidence of these various epizootics with distinct 'epidemic constitutions' and pestilence in man—sometimes preceding, and at others following in the track of, some great plague—are subjects well worthy the consideration of the scientific. It is only, however, when the records of other countries shall have been searched with the same diligence and with a like object, and tabulated after some such arranged plan as that which we have adopted in this report, that the waves of pestilence, which have left their track upon the sands of time, will enable us to speculate upon the laws by which they undoubtedly seem to be governed. In collecting materials for the epizootics of later years, we not only availed ourselves of the published notices upon the subject, but obtained, as a matter of private favour, information from many intelligent persons throughout the country. Such communications were not always addressed to the principal stock-farmers and graziers in each district, but to such persons of our acquaintance as we thought likely to be familiar with the subject, and upon whose time we could most readily encroach. Dependent as this country is upon its cattle resources for its best interests, we trust that in all future census investigations the subject of epizootics will engage the attention of the commissioners, and we would suggest the propriety of making it a portion of the annual agricultural inquiry. Comparative pathology has not received from

scientific men that amount of attention which it requires; yet, in the report upon the epidemic fever, the medical profession in Ireland afforded an amount of information respecting cattle diseases which had not been collected on any previous occasion. Inquiries of this nature must, in the words of an eminent writer on the subject, be regarded as "a political question, involving the well-being of a large portion of the community; not merely affecting those who rear and endeavour to derive profit from rearing animals, but also affecting the community as regards the supply of food; for if a disease of this kind cannot be arrested, not only will there be loss to the individual who is engaged in the rearing of animals, but to the public, who will, in consequence, have injurious food placed before them." Now, it is remarkable that public opinion entertained a like idea in Ireland, even so long ago as the beginning of the thirteenth century, for in the great pestilence that devastated Ireland in 1224, and which was one of the earliest and best-marked outbreaks of the *Teasca*, or typhus fever, which we read of, the annals have recorded an epidemic associated therewith as the "dreadful distemper—*galar aidbish*—among the cattle after they had eaten of the grass upon which a certain shower had fallen, and which produced various distempers, especially fever and dysentery, in the people who partook of their milk and flesh."

501. A great murrain of kine in the reign of Breasel Bodhiobadh; only one bull and heifer were left alive.

695. A murrain of cattle followed by famine for three years. It was prevalent in England also in 694 and 698.

981 and 987. A great epizootic of a cutaneous nature, termed *Molegarb*; also in England.

1016. Great mortality of cattle on account of the excessive rains. *Vide* "Rains and Floods," p. 342.

1040. Mortality of cattle and swine. The first particular mention of swine mortality. The disease also appeared in England.

1088. Great mortality of oxen, sheep, and pigs; also in England.

1224. A mortal distemper among the cattle of Connaught, from eating the grass after a certain shower. *Vide* also "Rains and Floods," p. 342.

1302. A great loss of cows, and a slaughter upon all the beasts of Ireland.

1464. The lower animals were attacked by epidemic colic.

1688. A disease (probably glanders) among horses in Ireland and England.

1739-40. A rot among sheep, many dying of the red water; the wool peels off the living. Several thousand sheep died in Connaught. Out of 2,000 deer in the Phœnix Park, 800 perished. Rabbits perished in great numbers.

1741-2. Horses, cows, pigs, and poultry were all struck by the plague and perished.

1745. A mortality among the black cattle, common to this and other parts of Europe. Horses died in great numbers. A murrain among cattle in Turkey.

1760. An epizootic among horses and mules; common to other parts of Europe. In 1761 distemper among horned cattle in Germany.

1764. A plague among dogs at Doneraile, and about Dublin.

1839. An epizootic of pleuro-pneumonia, which had spread over England and Europe, now raged in Ireland. An epizootic among cows and horses at Armagh.

I think I have now shown the urgent necessity of providing against this mortality; and the best provision we can make is by securing the services of a greater number of properly educated veterinary surgeons spread throughout the country. That being admitted, the first thing to be done is to establish a school, such as that stated in the prospectus. The Irish School of Medicine has well earned and long enjoyed a world-wide reputation, more especially in the practical department. There was a day, I acknowledge, when, owing to the short-sightedness of the licensing bodies, our own students, and foreign students also, educated in the lecture rooms, and taught in the hospitals of Dublin, had to go elsewhere to obtain diplomas on the knowledge acquired in the Irish metropolis. But that disgrace has long since been wiped away—every difficulty has been removed, and although I am far from being adverse to the young medical man (as I would be

to the young veterinary practitioner) improving himself by witnessing the practice in other countries, it is matter of congratulation that he now can go abroad with his degree in his pocket, obtained with the money spent in his native country, and without the terror of an examination hanging over his head. I only wish that our country medical practitioners had acquired a little knowledge, by even a course of lectures on the diseases of the lower class of animals, and I feel assured that when this college is established many medical students will take advantage of it. Our admirable Queen's Colleges, so full and complete in most other respects, and now beginning to produce such good fruits, are, I think, defective in this respect; that while they endow professorships of agriculture, they have altogether omitted all notice of the healing art as applied to cattle. High farming and improved agriculture chiefly consist in the raising of green crops, but for what? To supply man with food? Yes, but not directly. It is to fatten sheep, horned cattle, and pigs. But the higher you feed them, and the higher you breed them, the greater care they will require to keep them and to preserve their health. Now, the veterinary art is in somewhat the same state as medicine was in Ireland fifty years ago. The apprentice or the student learns the practical part of his business in some of the establishments of our Dublin practitioners, and then goes for a season to London or Edinburgh to hear lectures and take out his license. I ask you, should this be so? Are not Irishmen as capable of teaching comparative as well as human anatomy and pathology, of forming a diagnosis or performing an operation? My personal knowledge, and a glance round this assembly, tells me that they are.

The resolution was adopted.

Mr Small, who said he was the senior veterinary surgeon in Dublin, denied that there was any necessity for a Veterinary College in Dublin, as well as the practicability of maintaining it. Everything, he said, necessary for the education of the veterinary student was to be found in the Royal Veterinary College in London. There was not, he asserted, sufficient scope in Ireland for veterinary students to acquire practical knowledge of the profession. It was impossible to carry out the idea in Dublin. (No, no.) In Edinburgh there were veterinary schools, and hospitals, and no patients. If the project were attempted in Ireland, he said it would fail for want of support, and he argued that there was no use in educating young men to the profession and sending them out on the world when there were so many members of it at present looking for employment.

Mr Ferguson said he had listened to the observations of the last speaker (Mr Small), who had stated, and, perhaps, with justice, that he was the father of the profession—

Mr Small—No, no; I said I was the senior in Dubin.

Mr Ferguson—Then the only explanation I can offer for your remarks is, that you have arrived at that period of age which is justly denominated second childhood. (Laughter).

Mr MacFarlane thought the meeting should be under an obligation to any gentleman who came there to give them the benefit of his experience (hear). He had never had the pleasure of seeing Mr Small before, but when he came there to give them the benefit of his opinions, really the meeting ought to feel indebted to him, though not obliged to adopt his views, (hear, hear).

Mr Ferguson said he was sorry if he had been a little hasty in his observations. (Hear.) He differed from Mr Small altogether in his views as to the non-necessity of a veterinary college in Dublin, and in his ideas as to the comparative facilities of obtaining veterinary knowledge in London and Dublin. This was essentially a cattle-producing country; many of our Irish gentry might be described as half man and half horse—a sort of centaur, in fact. (Hear, hear, and laughter.) He (Mr Ferguson) affirmed that the facilities of obtaining veterinary knowledge in Dublin were greater than in any other part of the United Kingdom. And, as to the means of studying veterinary science in London, he was there for a number of years, both as a student and a teacher, and so high was the price of horses, as subjects for dissection, there, that none of the students could afford to procure them, and they were obliged to dissect juvenile donkeys. (Laughter.) In conclusion,

Mr Ferguson warmly supported the proposed college, and said that vast benefits would accrue by its establishment in Ireland. (Applause.)

The resolution was then put, and carried.

Dr Hans Irvine moved—"That a list be now opened of the names of those gentlemen who are desirous of co-operating in this movement."

Captain L. E. Knox said—My Lord, in seconding the resolution which has been moved by my friend Dr Irvine, I shall only say I do so with great pleasure, not only because it is one calculated to promote the objects of this meeting, but also because it is an eminently practical one. We have taken the initiative in founding an institution, the want of which has been felt for many years, and to which want speakers to-day have alluded. To carry out that institution a committee, and a committee holding a good position in the country, is necessary; and I am sure, when the results of this meeting are made known to the public, many will come forward to aid in establishing an institution here similar to that which already exists and flourishes in England. I am one of those who believe that Irishmen should stand on their own ground—(hear, hear)—and on their own merits. (Hear, hear.) From personal experience, I can quite corroborate what Mr Vereker has stated, that although in the army our most eminent surgeons are Irishmen, yet in the veterinary department of the army, there is hardly a single Irishman. (Hear.) I shall now conclude by seconding the resolution. (Applause.)

Dr Hayden next addressed the meeting, warmly supporting the movement.

The resolution was then put and carried unanimously.

The Lord Mayor was then moved from the chair, and the Hon. Mr Vereker called thereto.

Captain Thornhill, J.P., moved—"That the best thanks of the promoters of the Veterinary College of Ireland, and of the meeting, are due and hereby tendered to the Lord Mayor for his kindness in presiding upon this occasion.

J. Harrold Barry, Esq., J.P., seconded the resolution. He said that Mr Small's observations with reference to their not being sufficient employment for Veterinary Surgeons, were quite fallacious. Quite recently a Veterinary Surgeon had settled in a small town in his county (Cork), and was now doing a very large business, where none was done before. In Ireland Veterinary Surgeons could create a demand for themselves.

The resolution was carried amidst applause.

The Lord Mayor, in returning thanks, said he only considered it his duty, in the high position he was placed in, to give the best influence he could to benefit the citizens, and he did think, from what he had that day heard, that the object in view was likely to be very beneficial. He hoped it would prove successful.

The proceedings then closed.

RESEARCHES ON A PARASITIC MALADY OF THE SHEEP, DUE TO THE PRESENCE OF A LINGUATULA IN THE MESENTERIC GLANDS.

By M. Colin.

From the Report of the Imperial and Central Veterinary Medical Society.

(*From Recueil de Médecine Vétérinaire.*)

This parasitic disease, hitherto unknown either in man or the lower animals, depends on the presence of a very rare worm of the group *Pentastoma*. The mesenteric glands of several rams examined in April last were found of a deep brown colour, and consisting internally of a lighter coloured pulpy material. In this grayish pulp were noticed a number of flat whitish worms. These parasites existed in great numbers in little cysts hollowed out in the cortical substance of the glands. As they presented the distinctive character of denticulated pentastoma, that pass into the prionodermata of the dog and wolf, a hundred were introduced into the nose of several dogs, to test whether they would undergo such metamorphosis. The experiment proved completely successful. The little pen-

tastoma of the mesenteric glands of the sheep, introduced into the nasal sinuses of the dog, was developed into the worm spoken of by Chabert as the tænia lanceolata.

M. Colin was led, by the above discovery, to investigate the mode in which the worms gained the mesenteric glands, their progress of development while there, the lesions induced by them, their method of escape, and the changes they underwent in the nasal cavities of the dog.

It is now well known that parasites do not necessarily spend the whole period of their existence in the body of an animal. Many which live in surrounding media at one period of their lives afterwards become parasitical, and assume different forms; others again, which are at first parasites, assume an independent existence in adult life; while others still, which hold a certain form in one animal, afterward take on a different form when introduced into another living habitat. Such knowledge we have obtained through the splendid investigations of MM. Van Bunden, Siebold, Leukart, &c.

Thus, the common distoma, which embraces more than a hundred species, passes through several successive forms before assuming that familiar to us as existing in the biliary ducts. This animal, on escaping from the egg, is a ciliated larva which lives freely in soft water; after a certain term of independent existence, it penetrates the body of a mollusc, where it acquires a spora cyst or embryonic sac. From the cyst originate several worms, which soon find their way into a fish, where they lose their now useless tail and swimming bladder, together with the hooks by which they penetrated into their new habitat. The fish being in time swallowed by a bird of prey, and this animal in turn by one or other of the carnivora, from the small intestine of this latter the parasite finds its way through the excretory duct of the liver into that gland, where it becomes a complete distoma. In this condition the animal acquires sexual organs and produces eggs, which being voided with the fæces, again undergo the four developmental changes already described.

Analogous transformations take place in the cestoids. The embryo derived from an egg, is first a vesicle with suckers and hooks; these change into cystic parasites with sucking discs and a double row of hooklets, and these in turn change to the linked worm, each segment of which is provided with sexual organs, and can exist as a distinct individual. Each of these variations in form is only assumed on the worm entering a habitat where such form is necessary. The ecchinococcus of the liver and lung, the cœnurus cerebralis, the cysticercus cellulosi of the pig, and the cysticerci of the peritoneum of a great number of herbivora, undergo changes similar to those named above. Such, on arriving in the intestines of carnivora, produce true tæniæ, and the ova of tæniæ again produce the cystic worms above-named.

The pentastoma are also subject to transformations. These singular parasites live for the most part in the parenchyma of different viscera, as in the liver and lungs of man, of various mammals, of a great number of serpents, of lizards and fishes; sometimes in the air-passages, but more commonly in the intestines. In the embryonic state they are in the form of ovoid bodies, with two pairs of feet attached to styloid prolongations of the head; in the larva state they have an annulated body, and the mouth furnished with hooklets, but no sexual organs; in the perfect state they live on the surfaces of the mucous membranes, and have reproductive organs.

Worms, then, like insects, undergo changes in the progress of their development, and such changes are always regular. Worms, however, are often subject to alternate germination.

Thus it has been remarked by M. Von Bunden, that ruminants and rodents possess, in addition to their own proper worms, others which they raise for the carnivorous animals. These have no sexual organs, and are always encysted; the mouse raises for the cat the cysticercus pisiformis, the rabbit supplies the same to the dog; the sheep the tænia globosa, the cœnurus, and the pentastoma, for the wolf and other carnivora. When the mouse, rabbit, and sheep are eaten by carnivora, the cysticerci become tæniæ in the intestines of

the latter, and the pentastoma denticulata assumes, in the nose of the same animals, the form of the prionodermata, or pentastoma tenioides. In order to the development of these worms, it is absolutely necessary that the one class of animals be devoured by the other. How numerous and varied, then, must be the dangers of destruction to these creatures, when we consider that not only must the living habitat of the worm be devoured by another animal, but that this and all its various changes must take place at the proper stage of the parasite's development, in order that it may contribute to the preservation of the animal.

The order pentastoma, which has now been signalized for the first time as infesting the mesenteric glands of the sheep and dromedary, is derived from a sort of egg or embryo, provided with articulated feet and a stylet from the anterior part of the body. This embryo, which at first sight seems somewhat like an acarus, produces a whitish flattened larva, covered with prickles, and having four hooklets surrounding its mouth. This, which has no reproductive organs, is found in great numbers in small cysts in the mesenteric glands of the sheep and camel. It is only, however, when these creatures are devoured by carnivora that the parasites are fully developed. In this case they penetrate the nasal cavities, and there commence a new life. They grow rapidly, their hooklets are modified, they loose their prickles, and acquire reproductive organs, becoming in reality that beautiful worm called by Chabert the tænia lanceolata, by Rudolff the prionodermata, and by modern helminthologists the pentastoma and linguatula tenioides.

The pentastoma of the sheep and dromedary is a rare and curious worm, belonging to a group zoologists know not where to place. Rudolph speaks of one species found in the liver of the goat, and another in the lung of the hare; these he enters in his genus polystoma. Cuvier supposes they should be placed in the same genus as the prionodermata. Dr Blainville makes them a distinct order, under the name of onchocephaloids. M. Diesing, of Vienna, also places them in an order apart, under the name of acanthotheca. M. Van Bunden, who does not look upon them as worms at all, places them among the articulated animals. Lastly, M. Gervais makes them a subdivision of the class crustaceæ. These wide differences indicate how little is known of these animals, and, at the same time, how much their organization differs from that of worms. So rare are they, that M. Diesing, who has written the best description of them extant, has not had a single living specimen. M. Blanchard likewise describes them from specimens preserved in the Museum. For the future, the sheep will furnish naturalists with as many as they can desire.

The class of pentastoma which, as M. Blanchard has remarked, seem to hold a place intermediate between the worms and the crustaceæ, contains a few ill-determined species. M. Diesing enumerates eleven, of which four are proper to mammals, and seven to reptiles and fishes. These are as follows:—

1st. The pentastoma tenioides, which infests the nasal cavities of the dog, wolf, and, according to Chabert, of the horse as well.

2nd. The pentastoma denticulata, found in the livers of man, the cat and goat, in the lung of the ox, the porcupine, the pig of India, and of the rabbit. This species is constantly encysted in the parenchyma of viscera.

3rd. The pentastoma serratum, found by Fooclich in the lung of the hare.

4th. The pentastoma subcylindrica, seen in the liver of the striated monkey, the racoon, and the rat, in the stomach of the bat, &c.

5th. The pentastoma megastoma, found in the lung of a tortoise.

6th. The pentastoma subtriquetra, found in the fauces of a caïman.

7th. The pentastoma, with the pointed head, seen in the lung of the crocodile, and the trachea and lung of the caïman.

8th. The pentastoma, with a proboscis, from the lung of the boa constrictor and bothrops, and from the abdominal cavity of several other reptiles.

9th. The pentastoma minor, found inhabiting cysts, embedded in the flesh, and in different viscera, of most reptiles and fishes, especially the electric eel.

10th. The pentastoma moniliformis, from the lung of the speckled python.

11th. The pentastoma, with the bifid tail, got in the lung of the amphis bæna flavescens, and the abdominal cavity of an adder.

12th. A species discovered by M. Van Bunden, in cysts in the peritoneal cavity of a mandril, has by him been called the linguatula Diesingii, after Diesing.

All these species, except the last, which is of African origin, live in animals of Europe and America; all, save one, inhabit cysts placed on the surface or in the parenchyma of viscera. The pentastoma tenioides alone is found free on the mucous membrane of the respiratory passages.

That found in the mesenteric glands of sheep and dromedaries, and which will probably be found in other ruminants, appears related to the species called *pentastoma denticulatum* by Rudolph, and *linguatula ferox* by Rechmemister. It seems to differ from that seen by M. Premer on the livers of negroes and of the giraffe in Egypt.

This pentastoma is whitish, translucid, eliptical, and flattened, with its head broader than its caudal extremity. The mouth has four moveable hooks, each formed of three pieces, a pedicle with two branches, a claw articulated to the last, and a covering or hood to protect its point when it is not intended to attack the tissues. The hooks are moved by striated muscles as in insects. The body, from five to six millimetres (nearly one-fourth inch) long, has about eighty or ninety folds, with rows of sharp-pointed bristles, between which are a series of pores always open, which seem to serve for respiratory purposes. No individual differs from another, and all are destitute of sexual organs.

The worm, secluded in its nidus, performs slow undulatory movements. The hooks frequently move without any change in the form of the mouth; the body contracts the folds, alternately approaching and separating from each other, while through the skin can be seen the contractions of the intestinal tube. The creature lives several days after being removed from the glands, so that a minute examination could be made of its anatomy and physiology.

No difference could be detected between that of the sheep and the dromedary, unless in the brown colour those of the latter assumed in keeping with that of the digestive canal. From an examination of about 300 sheep, it was found that those containing them were generally less robust; the flesh was pale, and there seemed more tendency to the development of rot than in the others. Severalhad at once flukes in the gall ducts, ecchinococci in the liver and lungs, and tænia globosa on the stomach and mesenteric surfaces.

In the course of two months and a-half after April, when they were first seen, the parasites became much less common in the sheep slaughtered, and it seems probable that on the arriving at a certain stage of their existence, they either die in the glands or in the peritoneum after their escape. Colin has, indeed, found glands softened and cavernous, others pierced by little apertures; still, others in which these apertures had been closed by recent plastic deposits; and, lastly, glands in which such openings were filled by tuberculous matter.

On the first access of the pentastoma to the glands, there is no observable change in the latter, but on their increasing in size and numbers, the gland changes colour, especially at its upper part, where the different lacteals are given off; it becomes browner than natural, is so much diminished in consistence, that it gives way under the slightest pressure, and is readily torn on any attempt to separate its serous peritoneal covering. It is commonly diminished in size, and sometimes it seems flaccid, and evidently in a state of atrophy. By these external changes the slightly practised eye can easily detect the diseased glands at a glance.

Internally the glands show at little distances small round cavities, filled with a brownish pulp, in the midst of which are found the parasite. The cavities are, in the first instance, minute, few in number, and distinct from each other, afterwards they increase in number and size, and from absorption of their walls they frequently communicate with each other. The gland is thus destroyed in a progressive manner, until the whole glandular substance is destroyed. The cortical substance alone is unaffected, but even this is so much attenuated that it bursts readily on being handled. The mesenteric glands being no longer freely permeable to chyle, it may be at once inferred that nutrition must be largely interfered with.

The cells of the pentastoma have no proper walls, they are simply cavities hollowed out in the substance of the gland, and filled with the pulpy mass already mentioned. The internal aspect of their walls is irregular, and seems even corroded, and the brownish pulp with which they are filled is almost entirely composed of minute globular points, like lymph or pus cells. This has very probably formed the food of the parasite.

The glands may not all be affected at once; sometimes one only is attacked, more commonly several are, while in many cases all are more or less involved. The lacteals, opening into the glands affected, do not present any modifications, nor does the fluid which has passed through them seem to have undergone any change. It is remarkable that though all the mesenteric glands may be affected, the other lymphatic glands of the body, as those of the groin, the sublumbar, and the bronchial, are entirely free. This was the case in the sheep, and also in a dromedary examined at the hippodrome. In the latter animal the worms were confined to the mesenteric glands, but the other lymphatic glands were hypertrophied and indurated.

At different parts of the mesentery of the same animal, the glands were found in the following condition:—

1st. Certain glands were whitish, firm, and turgid, of a homogeneous structure; and when a small incision was made, a large quantity of milky chyle escaped. Such do not contain, and never seem to have contained, any pentastoma.

2nd. Other glands, healthy throughout a half or two-thirds of their extent, are becoming brown, flattened, and hollowed out by the cells of the parasite toward their superior part, or at one of their extremities.

3rd. Some are altered throughout, being brown, wasted, and hollowed out into cells which mutually communicate.

4th. Other glands have openings in their surfaces leading into the medullary substance, and which have been formed by pentastoma in effecting their escape.

5th. In some the surface is covered by irregular greenish patches of fibrinous deposit or false membranes, which seem to indicate the recent departure or the death of the parasite. In such cases the substance of the glands is marked by deposits analogous to the cells of the worm.

6th. Lastly, in some glands which are hard and thickened, little tuberculous spots are scattered here and there, denoting the presence of the pentastoma at a more distant date.

These lesions, though seen in the same animal, are more commonly found at different seasons of the year. Thus, at the commencement of April, the majority of the affected glands were in a softened condition: some weeks later, the greater number were perforated; still later, the existence of fibrinous deposits and false membranes on the surface and inside the glands was more commonly met with; while in the middle of June the worm is rarely found.

It is remarkable, that in the glands the worms are always found in the same stage of development; they are not changed previous to their exit, and during their stay they do not possess sexual organs.

It seems probable that the eggs of the parasite are taken up by the sheep along with their food, among which they have been dropped by shepherds' and other dogs, which are frequently in the fields where the animals feed. Being carried with the food into the stomach, it seems that there the embyro is developed, which, on its reaching the intestines, makes its way through the mucous membrane into the lacteals. The embryo of the *linguatula Diesingii*, studied by M. Van Bunden, is provided with four articulated feet, and a protractile stylet, with which it could easily pierce a delicate membrane like that of the intestine. If this embryo is similarly constructed, it will be easy work for it to penetrate a villus, and get into a lacteal vessel, after which it will be carried by the current to the nearest gland.

It is probable, that in the space of a year from its introduction the linguatula attains all the development it is capable of acquiring in the mesenteric glands.

They would seem to gain access to the nasal cavities of the dog by that animal devouring the sheep or feeding on the offal of the slaughter-houses; and on being

introduced into the mouth, they stick to the palate, fauces, &c., from which situations they readily find their way into the nasal cavities, sinuses, turbinated bones, and ethmoid cells. In these latter, in which they are always covered by the secretion of the mucous membrane, they are soon developed into complete pentastoma tenioides.

To examine the developmental changes of these parasites, the following experiments were performed. On the 17th April, ninety pentastoma denticulata, taken from the mesenteric glands of a sheep killed the day previous, were introduced into the nasal cavities of five dogs. Five were given to one dog, ten to another, twenty-five to the third, and the same number to the two last. On the 1st May, seven pentastoma of the dromedary were given to a sixth dog; and on the 21st May, fifteen pentastoma of the sheep to a large Newfoundland. One dog, being destroyed on the eighth day, had living pentastoma in the turbinated bones and ethmoid cells, but the parasites had not increased in size. Another, killed on the nineteenth, had all the pentastoma given to it, and they had increased two millimetres in length. A third, killed on the 13th June, the fifty-seventh day of the experiment, showed the parasites considerably developed; they are a centimetre and a half to two centimetres in length. The rings of the hooklets proper to the larva have disappeared, the intestinal tube is elongated, and has some bends, and on different individuals are seen the male and female sexual organs. The male has two elongated glands already filled with infusoria, a single large vesicula seminalis, its blind prolongations are complete, the prostates are well marked, the penis, retracted into its sheath, shows a great many convolutions, so that its length is already greater than that of the body. The female appears fecundated. It has an enormous sinuous ovary containing eggs, the copulative pouches seem full of spermatozoa, the vaginal oviduct is straight in some, and in others makes two or three spiral turns round the intestine. In other words the little pentastoma denticulata of the sheep's mesenteric glands has been developed into a perfect pentastoma tenioides. These latter are in every respect analogous to those generally found in the nasal cavities of the dog. They have not yet, however, acquired the great size which they are capable of attaining.

The other four dogs are preserved to investigate the gradual changes of the parasite in its nasal habitat, and the lesions they may cause to the cavities in which they dwell.

It may, however, be stated, that the little pentastoma of the sheep dies without reproducing any of its kind, provided the animal in which it lives, or its entrails, is not devoured by one or other of the carnivora; but that, should the latter event take place, it sticks on the lips, palate, or pharynx, gains the nasal cavities, sinuses, &c., and then undergoes further development. At a certain stage of development the female is fecundated, after which the male dies, and the female continues to grow until it has attained the great size of the parasite known as the prionodermata. The female has an oviduct ten or fifteen times the length of the body, from which it expels myriads of eggs upon the mucous membrane; these are expelled with the nasal mucus, and being taken up by the sheep along with its food, are hatched in its stomach, and, being carried into the intestine, the embryo pierces the mucous membrane, and gaining the mesenteric glands, again goes through the stages of its development.

These facts are interesting, as showing the identity of these two parasites and true original cause of those lesions the parasites produce in the different animals in which they are found. It is probable, that since the sheep raises this parasite for the dog, so does the dromedary for the hyena, lion, tiger, &c., and that future researches will show prionodermata in these animals.

A further paper on this subject is promised.

DISEASES OF THE PIG.

(From the Scottish Farmer and Horticulturist.)

Parasitic Maladies—Measles.

There are no disorders more to be feared in the pig than the frequently occurring ones due to worms, and which, as first in importance, merit an early consideration. We have before referred to the fact, that those ignorant of the diseases affecting this animal call every malady *measles*. One affection, which has received the somewhat formidable technical designations of Scaleciasis and Cachexia cellulosæ hydatigena, is recognised by the better-informed as deserving the distinctive name of "measles," or, we should rather have said, that as this is the affection most frequently so named, however objectionable the term may be, it is better for general and practical purposes than any other substitute.

It is important that a knowledge of the nature of this disorder should be widely diffused, as the flesh of the measly pig is charged with the parasite producing the malady, and which belongs to the cysto-cestoid group—a group of worms living in the bladder form in one animal, and as a troublesome tape-worm in the other. Thus the cysticercus cellulosæ of the pig is made up of a small vesicle of a yellowish white colour, varying in size from the head of a pin to a pea, and seldom larger. Examined by the microscope, it is found to possess a head armed with hooks and suckers, identical with and indeed the same as the tænia solium or common tape-worm of man. The measle or cysticercus accumulates wherever the areolar or connecting tissue of the body is abundant, such as between muscles at the root of the tongue, on the inside of the shoulder, about the flanks, and are in fact spread over many parts of the body.

There are no premonitory signs of attack by this parasite, and until the hydatids have increased largely in size and numbers, the health of the pig remains undisturbed. But with the multiplication of the parasites the strength of the animal is affected, and a weak, emaciated, consumptive or cachectic aspect is soon observed. The old authors, such as Goeze, believed the disease to be a form of scrofula, and the swellings were supposed to be due to enlarged glands. In accordance with this view, we find Viborg and others declaring the disease to be hereditary, and it has been stated that the produce of boars and sows affected with measles are sure to suffer from the malady. We are aware that the offspring of weakly and unhealthy parents are subject to measles, as, indeed, they are to any other parasitic disorder, but as the germs of parasites are never born with the animals which such parasites infest, so is it impossible that measles should be a hereditary disease. There is but one active cause in operation in producing measles, and that is the introduction into the system of the pig of the tape-worm eggs, which have many channels of transmission, but are principally taken in with the food. No doubt that an enfeebled animal is affected more readily than a strong one. Some enjoy an immunity from their vigorous constitution, whereas others readily fall victims to the intruding worms.

Symptoms.—It is only when the cysticerci are superficially situated, and have attained such a size as to produce a knotty appearance beneath the skin, or at the base of the tongue, that measles can be recognised. The only means of diagnosing the disease is by the detection of the parasite. There are genera symptoms, such as a hoarse cry, dulness, swollen appearance of the jaws, neck, or belly, and little tendency to fatten; but unless the "measle" or cysticercus is traced, the nature of the disease cannot be confidently declared. When the surface of the body has been examined, the mouth must be opened and the root of the tongue carefully inspected. On the under surface of this organ little round elevations and points, with a bluish-yellow reflection through the mucous membrane, indicate the disease. A similar appearance of the tongue is observed in no other malady.

In addition to the constitutional signs above noticed, we may mention that as the disease advances the animal becomes very dull and dispirited, eyes sunken, membranes of eyes and mouth pale, occasionally with reddish spots dispersed over them; breathing laboured, and the breath smells very peculiarly. As the

pig grows weak its bristles drop out, the legs become swollen, the chest and belly are also the seat of enlargement from water beneath the skin, and in the course of several months, usually in about a year, the animal sinks and dies.

The measle or cysticercus sometimes attacks the brain, and the disease is then of short duration. Epileptiform convulsions are early seen, and Spinola refers to a case in which a pig was found dead one morning without having given any signs of being unwell previously, and after death a collection of cysticerci was found in the membrane of the brain, and not a single measle in any other part of the body. From such a cause a measly pig not unfrequently appears to be affected with that disease more common in cattle and sheep, known by the name of sturdy, and which is due to a hydatid, the cœnurus cerebralis.

To every person who is fond of pork, and especially to every person who provides butcher meat for a family, the information should be afforded that if a bit of measly pork is swallowed raw or imperfectly cooked, there is a very great probability of the person who swallows it being affected with tapeworm. It is a remarkable fact, that until within the last few years measly pork was reputed wholesome; but since the interesting researches on tapeworm by Von Siebold and Küchenmeister, physicians have observed that the countries where human beings are most subject to tapeworm are those where measles is very rife amongst the pigs; and amongst us Drs Fleming, Gairdner, Barclay, Peacock, &c., have shown that the persons affected with tapeworm admit that they have been in the habit of occasionally eating raw meat.

We can add one instance to the many already recorded proving the connection between the presence of tapeworn in man and eating uncooked measly pork. Standing by the counter of a celebrated pork butcher in this city (Edinburgh), we observed the clerk pick at a piece of fat raw pork and put it into his mouth, On stating how dangerous the practice was, the individual said he had been suffering from tapeworm for years, and that he very much liked the raw meat. It is hardly credible that men can be so "piggish." Jews and Mahometans are rarely affected with tapeworm, and it is well known that they as rarely eat pork.

No doubt cooking destroys the measle, or cysticercus, but measly pork should be avoided as much as possible. It is still undecided whether curing renders such meat wholesome. Von Siebold says that the vitality of the scolices of tapeworm is not destroyed by the process of curing; but Küchenmeister differs from him, and thinks that the pickling and smoking of hams destroys it equally as well as cooking.

Any person who owns measly pigs should destroy them, and buy in fresh stock, and attend rigidly to cleanliness, exercise, and, last but not least, the best of feeding should be given.

There are other parasites rather frequently met with in the pig The one nearest allied to the cysticercus cellulosæ is the

Echinococcus Veterinorum.

This hydatid is found in large numbers infesting the liver, lungs, heart, kidneys, and other internal organs. Man is affected with a similar disease, but there is not the same connection between the occurrence of this malady in man and the pig as there is between the presence of measles and generation of human tapeworm. The practical man need only know that the echinococcus, like the measles, is an indicator of an unhealthy stock and bad system of rearing or managing pigs, both of which defects should be remedied as soon as possible, in order to preserve the owner from loss, and diminish the chances of such odious parasites multiplying.

DISEASES OF POULTRY.

(From the same.)

The study of disease in any animal tends to enlarge our views generally regarding the causes calculated to shorten life. Human pathologists are becoming more and more aware that they will never fathom satisfactorily the history of

morbid changes until they acquire a comprehensive knowledge of comparative pathology. The anatomist would have had at the present day very meagre notions of the fundamental laws which govern animal form, had he restricted his observations to the noblest of God's works, the human frame. Amongst the students of pathology we need men of the stamp of Cuvier and Owen, who are not in their thirst for universal observations satisfied with any restrictions.

Perhaps a Scottish farmer may ask, what has such a preamble to do with me? If we needed any apology for intruding on the attention of our breeders of horses and shorthorns the subject of poultry diseases, it would be that the study of these is calculated to improve our knowledge regarding horses and cattle; but Mrs Fergusson Blair, and perhaps a few more, would urge for the chicks independent claims to special investigation.

The universal operation of causes which affect animal health is admirably illustrated by epizootic diseases. Dr Lauder Lindsay of Perth is one of the pioneers in this country of researches in this interesting subject. It is very essential that minds accustomed to exact scientific research should deal with it, as vague declarations are made of this and that malady being seen in one animal which was thought peculiar to another, and for which declarations there are no sufficient grounds. It is a subject in which a little knowledge is a very dangerous thing, and as an instance of this we may quote the absurdities written on the occurrence of the epizootic Pleuro-pneumonia of cattle amongst sheep.

If we consider the epizootic diseases of poultry we shall find that they accord in their history with epidemics in man and epizootics in other animals. This very accordance is a matter of great moment, and which must be contemplated with the deepest interest by all who care about the study of medicine, human or veterinarian.

Professor Ercolani, of Turin, in two admirable articles contributed to the *Veterinary Journal* of that city says:—"I believe I am not far from the truth when I assert that amongst our domestic animals poultry is the most subject to epizootic complaints." He adds that such an assertion is not borne out by the voice of veterinarians, which is silent on such topics. Birds die unobserved and unheeded. No statistics are kept; but there is abundant proof in favour of the assertion. Gibson alludes in his Saxon Chronicles to a plague amongst poultry, which occurred about the year 671. Many authors speak of the prevalent plague of 1111 decimating the feathered tribes. In 1131 a wide-spreading epidemic in Britain was followed by very heavy mortality amongst fowls. In 1286 a similar event excited alarm in Austria; Paulet records an epizootic in poultry which occurred in Paris in 1578; Schottby says that in the year 1614 an epizootic appeared in Bohemia, in which the hens joined in groups of six or seven, turned their heads toward each other, and dropped dead. Other authors have noticed similar events about the same period. Stegmann relates that in 1697 hens, pigeons, geese, and guinea-fowls died with ulcerated pustules beneath their wings, and after death their livers were found diseased. In 1698 the same author notes a variolous fever, which destroyed the same animals. We skip to 1712, in which year it is stated that a carbuncular affection attacked geese and fowls at Augsburg. Schenchzer describes glossanthrax as an epizootic amongst hens and pigeons in 1732, but all that we have yet noticed seems to have been surpassed in severity by the diseases of 1763–64. During these two years almost all over Europe malignant anthrax affected our domestic mammals. Birds, however, did not suffer. They suffered in the poultry yards of Bohemia from malignant pustule of the head; and Paulet states the mortality from this cause to have been very general throughout Europe, but especially in Spain. At Toulon indigestions and impactions of the crop were very common. Jaqar speaks of malignant pustule of the head occurring in Moravia; and it is stated that in Italy, Cremona alone lost 5000 hens, Hensinger remarks that no one mentions the disease as having occurred amongst geese in 1763 and 1764; but in 1769–70 these animals died in great numbers throughout Germany. The same author moreover states that, by carefully comparing dates, it is evident that the epizootics amongst poultry were especially prevalent the years in which crops

were affected with ergotism; and Ercolani says that the mortality at that period amongst fowls was especially noticed, in consequence of destruction in the crops, which caused a general outcry.

In the succeeding decennium (1770-80) similar maladies were not uncommon. Rohlwes (1771) speaks of a skin disease—phthiriasis—produced amongst geese by a form of louse, and which killed a large number. Paulet relates that in the old province of Lorraine 600 geese died in the year 1774 from diarrhœa and vertigo. Ruling observed similar diseases in Hanover in 1777. Chabert described an epizootic anthrax fever, which occurred in 1778 amongst geese, in which malignant carbuncles formed about the legs. In the same year fowls had malignant pustules affecting chiefly the head. In 1789 and 1790 a general and contagious epizootic attacked all kinds of poultry in the north of Italy. Memoirs have been written on this plague by Baronio, Toggia, Brugnone, Majochi and Brugnatelli. Many believed it due to parasites, but Brugnone regarded it as a malignant fever. Tytler speaks of cholera occurring in India in 1817 amongst fowls as amongst men. Searle witnessed the same in 1828; and the Russians have recorded similar observations in 1830. In 1829, Dupuy observed a deadly epizootic amongst ducks near Toulouse.

We are so much more accustomed nowadays to hear of cholera as a wide-spread plague than any of the malignant or bubonic fevers, that observations on it are perhaps the most interesting. Gohen observed this disease amongst poultry in the duchy of Posen one year before cholera broke out amongst the people. Geese were the first seized, ducks next, guinea fowls third, and the domestic fowls last. Cholera was observed amongst poultry at Trieste, and was very severe in Gallicia. All this occurred about 1830. In 1831, great mortality is recorded amongst pigeons and pheasants, and a fatal plague appeared in Moravia and Silesia some months before the appearance of human cholera. Bohemia and Lower Austria suffered in the same way. Malignant anthrax spread considerably, according to Prinz, about Leipsic, but Ercolani thinks it was the same disease mentioned as cholera by other authors. Bucheister observed a great mortality amongst domestic birds in Hamburgh in the year 1831, one month before the cholera broke out, and Dupuy described a very general attack of epizootic ophthalmia in poultry in the Haute Garonne. We have perused with pleasure a memoir by Grognier, which appeared in the *Recueil de Médecine Vétérinaire Pratique* in 1832. It refers to a wide-spread plague amongst poultry in France, Italy, and Spain, which the author was called upon to investigate in the department de l'Ain. The symptoms which suddenly appeared were listlessness, thirst, debility, vertigo, and death. A purple hue of the comb and closure of the eyes, associated with diarrhœa, preceded death. Animals in perfect health in the morning were dead in the afternoon. Grognier alludes to the observation of cholera amongst poultry in the month of April 1832, shortly before the appearance of cholera in man. A medical student first drew attention to the fact, and with Magendie made some careful examination of dead birds. Carrère, Bréchet, and Robert also describe cholera amongst fowls in the medical journals of Paris. Bignani spoke of a disease in the vicinity of Mantua affecting the livers of fowls, and Mayer witnessed cholera amongst poultry in Russia.

The years 1833, 1834, and 1835 are almost unnoticed by writers on epizootics, so far as poultry are concerned. In various parts of Prussia, malignant anthrax prevailed amongst the geese in 1835, and, both in this year and the one following, the vicinity of Alfort was visited by a plague which destroyed many of the feathered kind. In 1836, cholera is reported as having been witnessed amongst the geese at Munich contemporaneously with human cholera. In 1840, Youatt published a letter in the *Veterinarian*, from a gentleman in Somersetshire, who alludes evidently to the well-known disease, gapes, as an epizootic not only in poultry-yards but amongst pheasants. In 1847, Spinola describes the appearance, in Prussia, of epizootic aphtha, which took place simultaneously amongst cattle, geese, and ducks. Guarrel writes to the *Belgian Veterinary Journal* in 1849 regarding a great mortality amongst pigeons in the spring of that year,

and due to indigestion associated with repletion of the crop, which he attributed to the seed swelling up in this organ. This seems to be, according to Ercolani, the same disease which Paulet noticed as having occurred amongst pigeons in 1770 in France. Gaurrel found nitre a useful remedy.

In 1850, Bouley speaks of cholera amongst hens shortly after the existence of human cholera in the vicinity of Alfort. Delafond, Renault, and Benjamin spoke of the same subject in 1851. A form of anthrax appeared at Dusseldorf in 1853, and Kordler describes a diarrhœa or form of cholera amongst the geese in Bavaria. Epizootic aphtha was described by Friedland in 1854–55, and Ercolani witnessed cholera amongst the hens in Piedmont at the time that cholera was raging. Eletti described a form of typhus in poultry which committed great damage. Many writers speak of cholera in fowls in 1855–56. Graus Claude and Müller speak of various epizootics in 1857, especially affecting Cochin-China fowls. Reissinger observed malignant anthrax, and Ercolani epizootic ophthalmia. In 1858, Bonignol describes in the *Receuil de Médecine Vétérinaire*, a parasitic epizootic of poultry. Graus Claude speaks of cholera in Prussia, and Falke of a verminous phthisis amongst geese in Germany. In 1859, Dreuder and Kolling witnessed epizootic ophthalmia in Prussia, and a disease due to a vegetable parasite infesting the comb. Near Turin a form of typhus was seen amongst fowls in 1859-60; and now there is a singular epizootic in Ireland due to worms in the eyes.

However tedious a chronological account may be, those who least like statistics will agree that the facts above mentioned are most significant, and furnish a strong argument in favour of a careful study of the diseases of poultry. It is evident that as the barometer indicates the probable state of the weather, useful signs may be obtained from witnessing the health of our poultry, regarding the diseases of man. Several have witnessed the appearance of cholera amongst the first—sometimes before it occurred in the second. There is a wide range of subjects for the scientific to treat upon, and we hope that practical persons, whose poultry-yards are occasionally visited by deadly disorders, may communicate the facts, with a view to laying a better foundation for the history of poultry diseases.

Journal des Vétérinaires du Midi. January and February, 1861.

I.—Calculous Malady of the Urinary Passages in the Ox. By M. P. Causse, Veterinarian at Castelnaudary.

This malady, common among the working oxen of some districts, is attended with so much danger of evil consequences, such as rupture or inflammation of the bladder, as to call for the special attention of veterinary practitioners.

Symptoms.—M. Caussé has never met with troublesome symptoms so long as the calculi are retained in the bladder, in the ox, although he does not dispute that such may take place. When, however, a calculus has passed into the urethra, the following symptoms may be noticed. On the flow of urine being arrested, the animal seems distressed, the flanks move rapidly, the tail is frequently raised, and over the ischial arch may be observed the contractions of the accelerators urinæ. The latter symptom may occur from the entrance of several small calculi into the neck of the bladder, which afterwards return into the cavity of that organ. Such a condition may be frequently observed, and small miliary calculi may be passed with the urine; but, in the course of a few months, the gradual increase of the stones causes one or more to be arrested in the urethra, and completely to arrest the flow of urine. Colicy pains ensue, the patient frequently lies down and rises again, has trembling of the flank, scrapes the ground, and strains, as if to urinate. On the ischial arch the distended urethra is observed to fluctuate with each contraction of the accelerator muscles. This fluctuation does not take place when the calculus is arrested in the neck of the bladder, but in this case the introduction of the hand into the rectum will detect the distended condition of the viscus.

In five or six hours more other symptoms are noticed, such as dependent head, haggard eyes, and partial sweats, which may be followed in turn by the cessation of pain and an unaccountable quietness. This indicates rupture of the bladder. Peritonitis is developed from the contact of urine, the patient ceases to ruminate, has slight colics and frequent shiverings. The skin loses its elasticity, and becomes adherent to subjacent parts; the belly gets flattened and pendent; the breath acquires a urinous odour, the pulse becomes feeble or imperceptible, marasmus ensues, and the animal dies on the sixth or eighth day after the tearing of the bladder.

Cadaveric lesions.—When the patient has been destroyed immediately after rupture of the bladder, the abdomen is found to contain a large quantity of urine. The same liquid has been absorbed, and has impregnated and given its odour to the flesh and other tissues. The peritoneum is inflamed and shows the arborescence of its vessels. The bladder, empty or nearly so, shows at some part an eliptical opening, with blackish, ragged, reversed borders. When the rupture is small and on the superior aspect of the organ, it will generally be found to contain calculi, varying in number from one or two to two hundred. The ureters and kidneys likewise generally contain a variable number of calculi. One or two are found in the urethra, commonly at its sigmoid curve. The mucous membrane around the calculus is black, swollen, and infiltrated. When any stones have been arrested in the neck of the bladder, they are commonly sunk in the membrane like teeth in alveoli.

When six or eight days have elapsed between the rupture of the bladder and death, the following lesions are seen:—The belly is distended; the sub-cutaneous areolar tissue beneath the abdomen, and of the hind limbs, is infiltrated with urine, and exhales a corresponding odour. The same odour resides in the muscles, which have become decolourised. The abdominal cavity contains about 200 litres of urine, with an insupportably offensive odour. The peritoneum is covered by blackish, easily-torn patches, but where the inflammation has been limited it presents a dull leaden hue. The bladder is contracted, black, and putrifying. The calculi in the urethra lie in contact with infiltrated portions of the mucous membrane, which sometimes retain their firmness, and are at others easily broken down.

Sometimes the peritoneum is covered with small horn-shaped granulations; the same may be said of the mucous membrane of the bladder, and tumours of different sizes may exist at various parts.

Description of calculi.—These are generally ovoid, varying in size from that of a millet seed to a bean, of a grayish colour, and formed of superposed layers, with a dark-coloured nucleus, having blood or mucus for its basis, though sometimes this consists of hair of a colour similar to that of the animal.

M. Viala, pharmaceutic chemist, analysed a large number with the following result:—

Carbonate of lime	81
Do. of magnesia	12
Phosphate of lime	5
Mucus and loss	2
	100

The urine of affected oxen was pale, limpid, and neutral. The addition of weak muriatic acid produced a prolonged effervescence and a rose tint. Oxalate of ammonia caused a precipitate, thus demonstrating the presence of carbonate of lime.

Analysis showed that, from the small quantity of mucus in the calculi, they were easily dissolved by weak acids. Sometimes an external coat of mucus retarded this action.

Causes of the affection.—These would seem to be general, such as the geological condition of the soil, the climate, the diet, the water drunk, and the kind of work.

The plain of Castelnaudary is partly surrounded by hills of calcareous rocks;

its own soil is argilo-calcareous, with a subsoil containing in many parts a large quantity of gypsum, and rocks of carbonate of lime. The climate is rather cold; the spring generally wet; the summer dry and hot, though with frequent storms, which cause sudden reduction of temperature. Autumn is generally good, and winter, sometimes very fine, is at other times long and rigorous. Mists occasionally prevail along the course of the streams. The east winds are fresh, dry, and extremely cold in winter; the south-east are hot, damp, and sometimes violent. The holdings in this district are farmed on the triennial rotation, and the oxen are kept at work in all seasons.

In summer the green food consists of lucerne, sanfoin, and vetches, while in winter they are fed on the straw and chaff of the graminaceæ, roots being extremely rare. On one farm, where all the oxen were attacked, the ashes of the forage were composed as follows:—

Carbonate of potass	35
Do. of lime	15
Chloride of potassium	15
Sulphate of potass	20
Do. of lime	4
Phosphate of lime	4
Do. of magnesia	2
Loss	5
	100

The water generally contains much sulphate of lime. An analysis of the water on the above-mentioned farm gave results as follows:—

Carbonate of lime	1·50
Sulphate of lime	1·20
Chloride of potassium Do. of sodium Do. of magnesium	3·
Air (volume)	2·
Carbonic acid	1·50

As a general rule, where the waters are less impregnated with lime, the malady is less commonly met with; this is especially the case when the animals are not subjected to excessive fatigue, and when they are fed on meadow hay.

Treatment (prophylactic).—Avoid as much as possible the injurious effects of heat, cold, wetness, and exhaustive labour. The supply of green food diminishes the number of victims. Where the water is strongly impregnated with lime, it should be drawn some time before being offered to the animals, and a little vinegar or muriatic acid should be added to it, to render the calcareous salts soluble. The addition of a little common salt will occasionally be found useful. The administration of the above-named acids may be impotent to dissolve calculi already formed, but would seem to prevent the further deposition of the calculous material.

Extraction of the calculus is generally necessary. The urethra is most capacious at its origin from the neck of the bladder, and decreases gradually to the orifice of the penis. It is cylindrical throughout all its course, except where it passes over the ischiatic arch, where it is flattened from above downward. The impediment caused by this flattening is nearly counterbalanced by the action of the accelerator muscles, so that calculi are less frequently arrested at this part than might be expected. They are commonly found in the neck of the bladder, or in the sigmoid curve of the penis.

In the former case the operation is performed by securing the animal by casting or otherwise, and making the incision along the median raphe where it passes over the ischiatic arch. The jets of urine generally show when the urethra has been penetrated. The opening may be enlarged, if necessary, with a probe-pointed

bistoury. The complete evacuation of the bladder may then be effected by means of a gum-elastic tube of small size. The patients after this operation are generally either sent at once to the butcher or are put up to feed.

When the calculus exists at the sigmoid curve the incision must be made in front, or behind the scrotum, according to circumstances. The curve depends on the contraction of two muscular bands originating from beside the anus. When these are relaxed the curve is effaced, and the point of the penis approaches the orifice of the sheath; when contracted the curve is formed and the point of the penis is retracted to the scrotum. In the former case the incision must be made in front of, and in the latter behind the scrotum. In the former case an incision is made through the skin of four or five inches long, the finger is passed along the urethra, and on detecting the calculus a small incision is made down upon it, when it will either fall out or may be extracted by means of forceps. Behind the scrotum a similar incision may be made, and the calculus sought for in a similar manner. If the position of the stone is not easily ascertained, the index finger inserted under the skin will generally detect it at no great distance along the course of the urethra. Infiltration of the areolar tissue may sometimes be prevented by dissecting it away from the penis, and placing a suture in the lips of the wound in the urethra.

Inflammation of the mucous membrane of the bladder, which sometimes ensues on the serious distension of that viscus, may be counteracted by bleeding, diluents, drinks slightly acidulated with vinegar, and warm clothing. Should these fail, the animal should be sacrificed, as probably the membrane has been lacerated.

Abscesses may form from infiltration of the areolar tissue around the wound. This may occur from the folds of the latter closing over the wound and receiving the urine into its meshes, or from the superficial and deep incisions not being parallel. A tumour forms, either circumscribed or extending along the whole lower aspect of the penis; it becomes hard, resistant, and finally gangrenous. Sometimes it is necessary to excise a portion of the penis. The fore-parts of the animal should be raised to make the urine gravitate backward, and escape by the wound on the skin. Frictions made with camphorated spirits of wine, and compression by a bandage, are often useful. These means failing, several incisions should be made along the course of the tumour, and portions of the areolar tissue excised. This will facilitate the escape of urine, and hasten the gangrene of the areolar tissue, on the sloughing of which the healthy skin soon contracts and obliterates the wounds.

II.—Retention of Urine in Ruminants. Spasms of the Neck of the Bladder. By M. Ringuet, Veterinarian at Belvès.

M. Ringuet holds that MM. Lafosse and Serres are mistaken when they ascribe urinary calculi in the ox to the feeding on maize forage; since, in 1859, when this food was very plentiful in his district, this affection was rare, while in 1860, when such fodder was uncommon, it was very prevalent.

He has frequently met with such cases in the ox without presenting those acute symptoms so commonly described by veterinarians. The symptoms may be only those of general constitutional disturbance, as dry muzzle, slight hoven, anxious face, and cold ears and limbs, with suppression of urine. Such an instance is related in which a proper diagnosis not having been made, rupture of the bladder ensued, necessitating the death of the animal.

Retention of urine may further be due to the collection of a calculous magma in the bladder. In such a case an incision at the ischiatic arch will lead to a very limited flow, and even the introduction of a sound will be ineffectual.

Lastly, urine may be retained from spasm of the neck of the bladder. An instance of this is recorded in which severe colicy symptoms existed for thirty-six hours, and no calculus could be discovered. The proprietor objecting to an ischiatic opening, the beast was slaughtered, and the bladder found enormously distended.

III.—Dilatation of the Œsophagus in a Heifer. By M. Gilis, Veterinarian at Molières.

This is the report of a case of dilatation of the thoracic portion of the œsophagus in the space between the two lobes of the lung and immediately in front of the diaphragm. The walls of the œsophagus round the dilatation were thin, and the folds of the mucous membrane effaced. It was filled by a hard and very compact mass of alimentary matters, which bore no signs of having been subjected to rumination.

The symptoms during life which showed themselves, with intervals of days or weeks, were: anorexia, cessation of rumination, colic, vomiting, hoven and gradual emaciation. Death seems to have been the result of hoven.

IV.—Paralysis, combined with Occlusion of the Femoral Arteries, Laceration and Hemorrhage from the Rectum, and Protrusion of that Organ. By M. J. Kopp, Military Veterinarian.

The subject of this was an eight-year-old horse belonging to the regiment. The symptoms which manifested themselves suddenly were as follows: profuse perspirations, haggard countenance, noisy and accelerated respiration, reddened conjunctiva, feeble and soft pulse. The rectum, which protrudes upwards of a foot, is reddened and congested. There is a complete inability to use the off hind limb, and the pulse outside the cannon is very feeble. The malady was not diagnosed, and remedial measures failed to give relief.

The autopsy shows a swollen and congested state of the rectum, the mucous membrane of which is of a violet colour for eighteen inches in front of the anus. In the anterior third of the congested part is a laceration of the rectum, with a diameter as large as that of a five-franc piece. No fæcal matters have escaped into the peritoneum. At the entrance of the pelvis, the peritoneal fold supplying the large intestines is separated by a large clot of blood, the result of rupture of a blood-vessel.

The left femoral artery is in the form of a hard cord, with a diameter of nearly half an inch. This condition exists from the division of the posterior aorta to the point where the posterior muscular artery of the thigh is given off. The external layer of the clot with which the artery is filled is smooth, but firmly attached to the internal arterial coat. The right external iliac and femoral arteries are blocked up to a similar extent. The clot is hard, and on being cut into, is found to be composed of a whitish or citron yellow external stratum, with a deep red and more friable portion in the centre. It is easily separable into a number of concentric lamella, which seem to indicate the gradual manner in which the obliteration of the vessel was accomplished. The adjacent arteries in both limbs showed no marked deviation from the healthy condition, and the muscles were neither discoloured nor emaciated.

M. Kopp concludes that obliteration of the arteries took place progressively, so that the external layers of the coagulum had become organised, while the internal bore marks of recent origin. From the ultimate sudden closure of the vessels, a superabundance of blood and an irritability was entailed on the adjacent organs with the effects above-mentioned. The cœtaneous closure of both femoral arteries, however, with some of the simultaneous results, are not easily accounted for.

EDINBURGH VETERINARY REVIEW

AND

Annals of Comparative Pathology.

ORIGINAL COMMUNICATIONS AND CASES.

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The Prospects of the Veterinary Profession: being the Inaugural Address delivered on 6th November, 1861. By Professor JOHN GAMGEE, Principal of the New Veterinary College, Edinburgh.

THE year before last I ventured to draw attention, in an Introductory Lecture, to the Requirements of the Veterinary Profession, and my remarks were specially noticed by the leading agricultural journals, as indicating the opportunities which existed for the development of the profession, and the advantages it offered to young men who might justly fear the competition of other callings.

Last year I insisted on the fact that there are certain relations between veterinary and social science entirely overlooked in this country, but of such public importance as to ensure, that at no distant period, a veterinarian might be engaged in the work of sanitary reform, and hold a prominent position amongst scientific men.

I purpose to-day to draw your attention to the Prospects of the Veterinary Profession, and I only trust that my remarks may help to produce a favourable impression on the minds of many as to what should be the intellectual and social standing of a veterinary surgeon.

Before I published statistical information regarding the small number—not 1500—veterinarians in her Majesty's dominions, an outcry had been raised that students had flocked to such an extent to the colleges that the profession was overstocked. It was argued that a third institution of this kind for Great Britain, must either prove a downright failure, or sap the resources of the other colleges, and hence that it was not desirable to multiply similar educational establishments.

But what I stated on the 3rd November, 1859, I can confirm to-day; indeed, I can furnish additional information to prove that the number and status of the veterinarians of the present day in no way represent the improvement in both respects which will be observed at the conclusion of each decennium henceforward. There is almost unlimited scope for the earnest efforts of teachers, the perseverance of students, and the exertions of veterinary practitioners. I am

aware how delicate the ground is I tread on, when I anticipate results, and even fix periods at which such results will be perceived. I do not shrink, however, from the task of proving that there are high and tempting prospects for the veterinary profession, on faith in which I can recommend well-educated youths, whose means might not induce them to face the difficulties of a professional career in the church, law, or medicine, to compete early in the prosecution of one of the most interesting pursuits which it can fall to the lot of man to follow.

I am not forgetting that a profession is chosen with a view to secure a substantial income if possible, and to obtain the full benefit of advantages, mental or otherwise, with which nature has endowed one who seeks work for a life's devotion. But young men are often impelled into special occupation by circumstances over which they seem to have little control. The choice of a profession is not always, and indeed not usually, the result of a careful comparison of advantages to be derived in different positions in life. The wig allures the barrister; the fact that his father is a surgeon, or that it is nice to be a doctor, draws the youth to the study of that greatest of all professions in my estimation — that of medicine. It so happens that the intellectual status of our profession, and hence its social position, has not been such as to tempt the students of the other learned callings to leave overcrowded colleges, hospitals, and law courts. In addition to the veterinarian's son, the young blacksmith who wishes to improve his condition in life, the young farmer who thinks he would like to be in a profession, we have students from the ranks of those who love animals for their own sake, and wish to be always amongst them; who like the idea of a career in which there is much riding and driving, who cannot bear the confinement entailed in mercantile duties, and who have a distaste for all else than tampering with horse flesh and physic.

But I wish to impress on the minds of those who may here listen to me, or who may afterwards learn my views from seeing them in print, that minds of the greatest breadth, young men of high aspirations who would wish to enjoy in their course through life a sense of working for a great object, of prosecuting researches of the greatest difficulty and deepest interest, of devotion to science; in a word, of prosecuting a career ennobling as it is useful,—yes, that such youths have unlimited scope and ample reward in prospect under the modest and too often abused title, 'Veterinary Surgeon.' The profession in this country must yet number amongst its members men as high as any that have prosecuted medical science, In veterinary as in human medicine, the attention is turned to investigations in the mysteries of organization, in the wondrous works of nature, the laws which govern disease as well as health, and which require intellects of the broadest grasp to attempt even an imperfect view of them.

Those who dread a monotonous calling, and who feel that they can

work earnestly and without remission at that which from day to day furnishes new sensations, which is likely to produce the impression of a wide sphere of action, and which yet satisfies by progressive conquests of mind over matter, can, I most honestly assure them, seek for that which will tempt them in the study of veterinary science.

It has been proposed, that, in order to raise the Veterinary Profession, and to constitute it a really learned body, we should now follow the example of the Medical Profession, and have preliminary examinations for students entering our colleges. I am aware that this would, though limiting the number of students, improve their status on entering; but I have two reasons for disapproving of the scheme. The first and greatest is, that we need much a large number of useful men who, though with a limited education, have many qualifications necessary to induce them to settle in districts where men of a different stamp would not spend their days. Indeed, the blacksmith, the small farmer's son, and the intelligent son of Scotch soil, who can rough the world, turned adrift with a plaid over his shoulder and a 'bap' in his hand, are needed for Scotland, Ireland, many parts of England, Wales, and the British Colonies.

But I have another reason: I have taught long enough to observe with delight the gradual development of a man's brain, as if the convolutions of this mighty organ had progressively unfolded themselves and acquired fresh powers of growth; it is a process so rapid, so marked, and yet so natural in a clever youth, that you contemplate with wonder the influence of scientific study on the human mind and the human heart. The hard-working intelligent student leaps from day to day further and further from ignorance, until you see before you the moulded skeleton of a gigantic intellect—the material to work upon for a few years, in order to have as able a man as ever adorned the halls of science. This can be observed in many who enter veterinary colleges without the advantages of a classical education. I have all along insisted that the students we have are, intellectually, not inferior to those who fill our medical schools, and a proper system of scientific training is sufficient to produce the desired change from the plough-boy to the man of science. Preliminary examinations would check the growth of our profession—a growth which I insist is all-essential in the present day. Scotland is truly the country above most others in the world in which native talent, fostered by individual resources in the shape of indomitable perseverance and determined purpose, may be found to accomplish much.

Yes, we must make our men, and it is this which the veterinary colleges for the past have not succeeded in doing in the United Kingdom; it is this which we need, in order to open out a new field for some of the educated youths of Great Britain; and to convince the public that the veterinary art is not the dirty, black-looking trade which many of our Edinburgh friends think, when they walk the streets of this and other

towns, and see a sign-post marked 'Veterinary Surgeon' and 'Veterinary Forge,' and would feel contaminated by too close a proximity with the worthy who dispenses his physic balls, and pretends to cure disease. We must infuse new spirit; seek some fresh leaven; distribute a few really clever fellows who have studied with us several years, and not a few months; and then we shall see more frequently, what is very rarely witnessed here; viz., the veterinarian appreciated and in good society.

I need not attempt to prove what has been admitted by all, that veterinary science has progressed far more rapidly abroad than it has here. I only wish to allude to the fact with a view to point to the course to be pursued, whereby we can gain ground rapidly on our continental friends.

In a kingdom over which the sun never sets, renowned for wealth, for the advanced state of agriculture, of science generally, and medicine in particular, the excellence of its breeds of animals, no less than the enterprise and intelligence of its people, shall it be said that the veterinary art cannot be as well cultivated as it is, not only in France, or in Prussia, but in the smaller German states? With the paternal interest Emperors and Kings manifest in the progress of their respective countries on the continent of Europe, large sums of money are annually devoted to the support of veterinary colleges, to the payment of a large staff of civil as well as military veterinary officials, and to the institution of bursaries for districts whence youths may be appointed to learn so useful a profession, almost free of expense to themselves or parents. How can our colleges, it is said, compete with the extensive establishments which may be seen at Paris or Berlin, Lyons or Vienna, Bruxelles or Stuttgart, Dresden or Munich? Louis Napoleon grants L.20,000 a-year to French veterinary colleges, as readily as he will pay one or two thousand guineas for a thoroughbred stallion, or several hundreds for a superb charger, which can only be had in our own island. What the will of a single man accomplishes abroad, must be effected by a stronger and more certain will here—the public will. There are charms in the order, obtained at a moment's notice, through a Minister of Agriculture or of Public Instruction; but let us not forget that the same hand which graciously bestows the bounty, may as quickly doom a flourishing institution to be abolished. The single will is prompt, but it may be at moments adverse, as it is at others favourable.

I believe that this country can and must afford hereafter to do more for the veterinary profession than it has done, but it is certain that the members of the latter must be strengthened in numbers and by a better intellectual standing, in order to assert their rights and claim privileges due to their important mission. Independently of Government aid, as a public necessity, as a boon to agriculture and commerce, and backed with the good wishes of all lovers of animals, if only for humanity's sake, the veterinary art will be sufficiently patronised to prove that it is no exception to the general rule, viz., that

we can excel in Britain. However large the schools, excellent the teachers, ample the resources abroad, they are all to be exceeded here, and it is the certainty of realizing this which assures us that the prospects are bright for the veterinary profession in her Majesty's dominions.

There certainly appears to be much greater obstacles to the diffusion of veterinary knowledge here than in many places on the continent, and it is remarkable that an insular position seems somewhat adverse to rapid strides of a particular kind.

Let us look to Ireland. Its history in very many respects explains how tardy progress in science may be accounted for, but it is essentially a cattle-breeding country; its horses are pre-eminently the best for many purposes, and how could we get on without the large numbers bought by British dealers annually. This is owing to its soil and its pastures, not to any special wisdom of the Irish in the management of animals; they know good horses, but they often abuse and destroy them in rearing and breaking. An enormous amount of cruelty is inflicted on these noble animals, to the loss of their owners, and through their ignorance. In 1860, the return of live stock for Ireland gave 620,938 horses; 3,599,235 head of cattle; 3,537,846 sheep, and 1,268,590 pigs. I think that, in a prosperous country, that should represent occupation for at least 300 veterinary surgeons, and this would be giving to each a free area of nearly 150 square miles of surface, yet the total number now does not attain 40. An Irish veterinary college is being established, and I wish it success. I repeat what I said last year, that a college in Dublin would undoubtedly give an impulse to the study of the science of comparative pathology, would attract more to the profession to practice as veterinarians in Ireland, and would greatly strengthen the veterinary profession.

I cannot refrain from quoting a paragraph from the admirable speech of Dr Wilde, at a recent meeting of the promoters of the Dublin College; a speech which told with the best effect from so learned a man, and which indicates the advent of a new era for the veterinary profession.

Dr Wilde said:—"Any one who, like himself, was reared in one of the great cattle counties of the western districts of this kingdom, must have been acquainted with the remarkable degree of ignorance and superstition that had always prevailed with respect to the diseases of the lower animals. Who had not seen the practice of the cow-doctor? Ireland was the great emporium of animal food for the United Kingdom, and, therefore, the proper treatment of cattle was a matter of the greatest importance to them. By *pleuro-pneumonia* thousands of heads of cattle had been lost, and this was a disease not understood. The only thing to be done was to provide a larger number of veterinary surgeons, properly educated, and the best way to do that was to establish such a college as Dr Cameron had mentioned. He was sure, when that was founded many medical students

would take advantage of the opportunity of studying comparative pathology as well as comparative anatomy. He fully concurred in the remarks as to educating the herds in the elements of the sanitary condition of the cattle. Who is there amongst us who has ever seen a farrier examining or operating on a horse, or a cow-doctor (such as was this very year caricatured in our Art Exhibition) searching for an elf-dart or fairy arrow under the skin of an animal labouring under the murrain or the blackleg, and when he had juggled one out of his sleeve, and boiled it with some rap half-pence in drink for the suffering creature, but must have regretted not merely that such ignorance and popular superstition should prevail in any civilized country in the middle of the nineteenth century, but also that the property of the poor and the rich should be entrusted to such imposture. Now, my lord, (addressing the Lord Mayor), I stated that Ireland was the great emporium for the animal food of the United Kingdom. Such, from its position and the nature of its soil and climate, it was always intended by a wise and beneficent Providence to be, and to that first and legitimate object it is fast returning; and allow me to say that to this return, no matter from what cause, we may attribute much of our present prosperity. But, while this island is so peculiarly suited to the rearing and fattening of cattle and the breeding of horses, it has also been, from the very earliest times, subject to the most dire pestilence, affecting both man and beast, that any country in north-western Europe has been subjected to. In consequence of the paucity of population, the universal improvement in the dwellings, food, and clothing of the people, the general drainage of the country, the opening up of distant districts by railway, the establishment of poor-laws and hospitals, the great advance of medical science, and the sanitary regulations in our cities and large towns (including the improved water supply to the metropolis, with which your lordship's name is also connected), I fear not to prophesy that we can never again witness such scenes as those produced by the great famine and pestilential period which we have so recently passed through. But while plague and pestilence may, by the effects of a good government, and those other influences to which I have alluded, be kept from desolating the poor man's dwelling and be driven from the rich man's door, the pleuro-pneumonia, and other epizootics, against which no national precautions have yet been taken, will, I fear, re-appear, and tend largely to decrease our national wealth."

Further on, Dr Wilde remarked:—"I think I have now shown the urgent necessity of providing against this mortality; and the best provision we can make is by securing the services of a greater number of properly educated veterinary surgeons spread throughout the country."

But I was drawing attention to Ireland, with a view to prove that when a country is separated by the ocean, obstacles, even in these days of steam navigation and railways, exist to progress. The veteri-

nary profession has been mainly recruited over Great Britain from youths of very moderate means, and this class has dreaded crossing the Irish Channel to study either in Edinburgh or London. Doubtless the emigration which has been going on, as well as the greater poverty of that class which has supplied us with students here, may account for the limited number of Irish veterinarians.

But we may look at home—we may go to the heart of prosperous England, and we shall find the country swarming with unqualified practitioners. It is within an easy journey from Edinburgh that you will still find the eyelids of cattle extirpated, tails cut, salted, and peppered, and, in fact, the deepest ignorance prevailing.

Agricultural literature is, however, improving so much, and farming in the remotest districts is being carried on with such intelligence and enterprise, that we now find scope for the profitable employment of veterinarians, where certainly a few years back they could only have expected to starve.

But, if Scotland is yet ill supplied with veterinary practitioners, if Ireland is just forming means for the distribution of veterinary surgeons in its various counties, what shall we say of the British colonies? Wherever the industrious farmer succeeds in turning fresh soil to profitable account in lands hitherto untrodden but by wild animals and savages, special protection is required to favour his prosperity. With much enterprise, animals are imported; and the very means adopted to enrich a country may prove its destruction. Diseases break out; they are transmitted from Europe to the New World; their germs traverse the ocean just as certainly as the seeds of plants. New diseases, attending a modified system of culture and of feeding stock, due also to the perilous period of acclimatization, call for the aid of science, for the skill of able veterinarians, who must now turn their attention to North and to South America, to the islands of the Pacific, especially the improving provinces of New Zealand. If between two and three hundred veterinarians are needed for Ireland, I say that between one and two thousand have yet to be distributed where the industrious emigrant has created a new field for British enterprise. We cannot overcrowd our Colleges for scores of years to come. The English language is spoken over the greater part of the universe, and where that is the vernacular, be assured that you will find the prosperous lands, the herds of cattle, and magnificent steeds, required to furnish occupation, and, indeed, to afford wealth, to the veterinarian. If France has three thousand veterinarians, nearly three times that number may be computed a reasonable one for the enormous and prosperous dominions of her Most Gracious Majesty, Queen Victoria. Why shall we stand below half?

Let us for a moment suppose that British veterinary colleges were crowded, and that the number of veterinarians annually qualified exceeded the number required in the United Kingdom, have we not America to look to? It may be an unsatisfactory time to draw attention to the United States, but even now there is abundant scope,

perhaps more so than in times of peace. It was only the day before yesterday that I received the *Utica Morning Herald*, in which I find that alarm had spread regarding disease in the scanty cavalry of the Northern army. Two veterinary surgeons inspected 20,000 horses in actual service, and 8000 at the receiving depot in Washington, and found them free from the dreaded glanders. Notwithstanding this satisfactory account, I have no doubt that smart veterinarians would be very acceptable; and it occurs to me, that as the prospects of an amicable settlement are not very promising, the armies will increase, and professional assistance will be much needed, and well paid for. The Crimean war gave a great impetus to the veterinary art in Great Britain. Many young men entered the army, and the number of veterinary students increased considerably.

The position of veterinary surgeons in her Majesty's army is most satisfactory. By a recent warrant their position and pay have improved, and their privileges are equal to those of other commissioned officers.

Let us consider how the veterinary profession must be developed into the just proportions required for the good of the British public.

I have said that the profession must assert its value by intellectual progress. In addressing veterinary students on this subject, I have to inform them that they must aim from day to day, beginning by the very first lecture they attend, to gather as much information as possible. They will find great difficulty at first, less as they proceed, but every day something must be learned; and it is very remarkable how much can be acquired in one short winter season. It is essential that, by careful attention at lectures, by reading and writing at home, by dissection, and all available means of acquiring knowledge, every branch of the veterinary art should be thoroughly studied. Anatomy, chemistry, physiology, materia medica, veterinary medicine, and surgery, must, so far as they can be learned at the present day, be acquired in the routine of college studies. It is a colossal task; but when a man is an expert anatomist, a good chemist, is acquainted with the great truths of pysiological science, and, in fact, is an accomplished veterinary surgeon, I can assure you that he can and should stand side by side with scientific men of any denomination. Why they have not done so is explained by the past position of veterinary education and absurdly limited period of attendance to college studies. But, some may say, horsemen want to see a veterinarian active and intelligent amongst animals, capable of handling a horse's foot and preserving him from lameness,—not afraid of a leather apron and a blacksmith's hammer. I may mention that that is what I want. That is one great feature of this college, that no branch of the veterinary art is despised, and that all are pressed upon the attention of the student, and he is earnestly advised to devote time and labour to learn everything and render himself truly practical in his calling.

Not many months will elapse now, indeed I trust and think very few, before we shall make provision in accordance with the systems

adopted in the best continental schools for teaching every department practically, and amongst others the art of farriery. So far as lectures and demonstrations are concerned, we accomplish more than has hitherto been done in this country, but we are not satisfied with half measures, and we are not satisfied with the excuse that all cannot be done here, because ours is not a Government College. We shall set the example to the best of our abilities.

I am truly surprised that teachers addressing large classes should not be afraid to condemn any part of a useful art as derogatory to a man of education, to a veterinary surgeon aspiring to a good position in life. What if our Watts and Stephensons had preached to engineers, that they should shun the forge and only attend so far as learning principles is concerned, and to find out how business can be profitably conducted? British engineers would not boast of laying the first railroads in all parts of the world, and of raising their profession in this country to the highest possible position. What we wish to see is the able anatomist, the man who can auscultate the heart's sounds and respiratory murmurs with great accuracy, who can diagnose mysterious diseases, and prescribe remedies with judgment, also throw off his coat and send a crippled horse sound in as many minutes as another man, educated on the system advocated by some, can prescribe his blisters and operations which uselessly torment many lame horses for weeks and months together.

So that, if I am for elevating the standing of our profession, by the cultivation of the mind, by the prosecution of science to the same extent as our medical neighbours, I am aiming at the only means of testing the value of science, its application to practice, and enhancing the practical usefulness of an important calling.

There is one thing certain, that we are greatly measured by our economic worth, and it would be no use urging proficiency in science to promote our welfare, if it did not ensure the greatest efficiency in practice. This it will do if we do not disregard and feel above the daily duties of a veterinarian.

But in developing the resources of our profession, having secured good men, some provision must be made for them, that their services may be available for the country's good. Doubtless every man must look after himself; but, as I have before indicated, Colonial Governments must assist in their distribution, civil appointments must and will be found in the country, and in this respect I believe we shall to a certain extent follow in the steps of the French, Prussian, and other governments, which afford satisfactory precedents, and substantial proof of the value of veterinary surgeons engaged in various capacities over the whole country. There is less need for government protection here; but the medical man has the opportunity of numerous appointments; the lawyer, I need scarcely say, has a large share of the public money; many other professions receive their due; and ours must claim its allotted portion.

I have a few remarks to make to those who do not study veterinary

science with a view to become veterinarians. There are more of this class in Scotland than in England, or any other country I have visited. It is true that in German and French agricultural schools veterinary professors exist, as at Cirencester, but I venture to think that the single class on veterinary medicine in an agricultural college is not attended with the same result as study during at least one winter session in a veterinary college. A French professor once informed me that the best farmers in his country were those who had studied thoroughly the veterinary art. Such a study in France extends over four years, and includes systematic and practical chemistry, natural philosophy, natural history, especially botany, besides the special veterinary classes, such as anatomy, physiology, and veterinary medicine and surgery. It is easy to understand that such a course of training should fit a young man for the duties of a practical farmer. The want of an agricultural college is felt in Scotland; but with the admirable courses delivered in the University by Professors Wilson, Allman, and Balfour, with the erudite lectures by Drs Playfair and Macadam, coupled with the information to be obtained in veterinary colleges, I think our young farmers are not badly off. But there is one point in which they require advice, and time will work some changes in this respect. A farmer now-a-days thinks his son will be all the better, to use his own expression, with a little theory, and he determines on giving him a winter at college. Now, this little theory and the single winter in Edinburgh are quite insufficient. Many think that if they attend one or two classes it is all they need, and others cram as many as they can in the single winter session, because they cannot spend another six months in town. I must say that, with agriculture as with veterinary science, a little knowledge, though better than none, is often a dangerous thing; and I would wish to see some follow the example of an exceptional few now to be numbered amongst our students, who, though preparing to be farmers, consider that it is to their interest to devote considerable time to studies of incalculable advantage in the modern enlightened system of farming.

I have heard some veterinary professors and veterinary surgeons say, that teaching the farmer how to treat his stock was a bad thing for the profession. I am convinced that that is a narrow-minded, egotistical view of the subject. It is, in fact, false, and that for two reasons. In the first place, the young agriculturist who dabbles with a little veterinary knowledge, is apt to do more harm than good, and the veterinarian is required to rectify matters. But if the farmer is able and intelligent, having worked hard at veterinary science, he will most probably not trust to his powers, but with well-grounded diffidence seek the individual in constant practice. He may help himself when no other means are at hand; but he will not be vain enough to think that he can supersede the regular professional man. In fact, I find that our profession is most appreciated by those who know most about it, and the diffusion of veterinary knowledge is the best guarantee that employment for veterinarians will increase, and

their remuneration be least grudged. If they attempt practice in districts where farmers are totally ignorant of the advantages of the profession, they will be ill cared for, and indeed starve. The reverse will be observed amongst well-educated agriculturists, notwithstanding their proficiency even on veterinary subjects.

In fact, I consider that the prospects of the profession progress *pari passu* with the progress in agricultural pursuits. Districts are opening up for us, in which at one time every sick animal was believed to be bewitched, and the tricks of the sorcerer were trusted by credulous and timid people. I hope that agriculturists will henceforward learn that there are many general questions to be investigated with their aid, and, indeed, on their instigation, which do not fall precisely within the province of the country practitioner, but which should not, as they are at the present day, be left unheeded, or to the discrimination of shepherds and similar individuals. Veterinary science must tell with effect over our extensive sheep-walks, though we cannot expect veterinarians to settle, where they would see little else in the shape of disease than braxy and sturdy, and where miles and miles of rugged mountain roads would have to be tramped to earn a few shillings. There is a wide field in Scotland for general researches in the diseases of sheep. It is a subject of great interest to myself, and of great importance to the Scottish flockmaster. I do not pretend, however, that our sheep-walks are to afford profitable employment to our veterinary practitioners.

I trust that my remarks may indicate substantial grounds for the opinion that the veterinary profession is still in its infancy—that its development may with advantage to the public be accelerated—that young men need not fear to lack in it a field for lucrative employment—and that it is worthy the serious attention of men highly endowed with the qualities essential to success in any sphere of life, but especially in a learned profession.

In conclusion, I may be permitted to say, that this, our fifth Session in this College, is opened under circumstances even more favourable than the past. Our students are already numerous, their number is increasing rapidly, and, so far as my experience of them is concerned, there is every reason to congratulate ourselves on the zeal and industry they evince. The work before them will call forth all their energies, and I have not the least hesitation in saying, that those who will be prepared for their examination next May, should their enthusiasm not have slackened since we separated last session, must materially help to prove what I have insisted on for several years, that it is not the students who have been at fault for the past, and our veterinarians would have held a better position had they had the advantage of a rational system of education. I have to ask our students to work earnestly, in order to further the cause for which this College was established—viz., to advance veterinary science, and thus to improve the prospects of the veterinary profession.

On the Position assumed by the Horse's Foot in Progression.

By James C. L. Carson, M.D., Coleraine, Ireland.

(To the Editor of the Edinburgh Veterinary Review.)

Sir,—No amount of description in words could convey the same accurate ideas regarding the laying down of the foot of the horse, which can be gathered by the eye, from one glance at Mr Gamgee's Plate, which will be found on the 289th page of the *Review* for January, 1859. How any person can look at that plate without admitting the correctness of my views, is to me somewhat astonishing. Let Mr Gamgee's three figures represent the three methods, toe, flat, and heel, of *laying down* the foot, and then imagine the position of the rider in each instance. In No. 3, or the toe case, the horseman would probably do well for his family, if he had his life insured; in No. 2, or the position advocated by Mr Dyer, it is quite evident the action would be extremely stilty, and the concussion would go right up through the leg of the horse to the body of the rider; whereas in No. 1, or the heel case, there is every appearance of elasticity, action, and ease. It would be altogether impossible for the horse to bring his toe, or the flat of his foot, to the ground, *whilst the pastern retained its most favourable angle for breaking the shock;* whereas the heel position obviates concussion as far as possible, in consequence of placing the foot in a favourable angle with the bones of the pastern.

There can be only one right method of laying down the foot. Whatever it is, every deviation from it must be a defect. This principle is so self-evident that I would never think of arguing with any person who would dispute it. The works of Nature are not so clumsy and ill-arranged, as that there is no definite method. Man *can* walk backwards; but the only natural and correct plan is forwards. They are not interchangeable. The one cannot be substituted for the other, with comfort, ease, and full speed. So is it with the horse and every other animal. Each has a right method; and every deviation from it is unnatural and defective. My opponents have no right to object to the principles I am here laying down, because they give fair play to all parties who are looking after truth.

Now, in regard to the horse, what is the proper plan of laying down the foot? If the toe *should* come first, then the toe action *must* be by far the best, safest, and most comfortable—particularly when it is evident and well marked—and the heel action *must* be the greatest possible defect. Is it found to be the case that the evident toe-action is extremely good, and the heel-action extremely bad? Is there any *really practical* horseman in the world believes it? If there is, I will give him up as hopeless.

If the foot should come right, flat, stump upon the ground, the centre must then be considered practically as the point of contact; and if a deviation from the natural position takes place at all,

it must be a matter of perfect indifference whether it is the heel or the toe comes first. On this view they are both perfectly on a par. Now, I ask, would Mr Dyer himself take a horse that plainly puts his toe first to the ground, as readily as one that evidently puts down the heel? I am sure he would not. Still, to be consistent with his own view, he ought to hold that a perfectly visible toe-action is quite as good as a perfectly visible heel-action. I am certain, when he thinks more of this matter, he will change his opinions. If he still doubts, let him stoop down to the level of the road whilst he watches a *good*-actioned horse going down a hill, and if he plainly observes him laying the heel first to the road, as I have often done, he will never, by any chance, find him in the slightest degree impeded in his action by laying down the heel, but the very reverse. Then let him look at the other side of the picture, and see the stilty, uncomfortable, unsafe, tedious, clumsy, and defective action of the horse which evidently sticks his toe into the ground, either up the hill, or on the level road.

With regard to my plan, or the heel first, I would like to know how it is possible, even in theory, for it to produce either stilty, unsafe, impeded, or disagreeable action of any sort; and I would like to see the man who will deliberately reject the horse for having such a method of going. I have never yet met a man so foolish as this comes to. If I do ever meet him, I will send him up to the British Museum, as a specimen well worthy of preservation.

Mr Dyer followed Mr Paton's example in objecting to a comparison with man. In one sense they are right; but in another they are wrong. If the comparison is put forward as a proof, they have every right to reject it, because proof can result only from careful, special, *observation* on the horse himself; but if it is used merely as an illustration, or in support of previous observation, their objection is unreasonable, and does not hold good. For instance, when I wanted to account for the occasional deviation from what I call the natural, or heel, action, as may be seen in those cases of defective power, or malformation, where the toe is perceptibly laid first to the ground, it was quite allowable in me to take the example of man, in whom all parties agree to the heel action as natural, for the purpose of showing that even here we may frequently have the toe or flat of the foot brought to the ground, as the result of debility or bad formation. No person would argue that the toe, or flat, is the natural action in man, because he is occasionally found to lay these parts first to the ground; neither should any person ever argue that the horse has no definite method, or that the toe, or flat, is the natural plan, merely because we sometimes find him planting these parts first upon the surface. The plan which, by observation, is found, in all possible circumstances, to be consistent with free, safe, speedy, elastic, and powerful action, must be the natural one, and all deviations from it are defects. If any plan is ever found inconsistent with good action, in a healthy state, it cannot be the natural one. I have been

driving a pair of horses for some years past, which are so very well matched, that few parties would know the difference between them, without looking at their action. One of them lays down the heel, and glides along with ease, elasticity, and speed; and there is little splash from the road. The other plants the foot as flat as possible on the surface, and he is very stilty, although with a magnificent shoulder, and wants ease, elasticity, and speed. He lays his foot so flat, that it creates a marked sound, and the mud flies in all directions. In every particular, except the laying down of the foot, the latter is the more perfect animal of the two.

Those who object to the comparison with man, would do well to try their hand with those cases of animals walking on all fours, which have been adduced by Mr Lupton and Mr Gamgee. If, as is alleged, such animals as the cow, dog, camel, and elephant, plant their heel first, why may not the horse do the same? If such action does not injure the former, why would it injure the latter?

Mr Dyer is only wasting paper in pointing out the ignorance of some parties on the comparative anatomy of the horse and man. I know it as well as he does; and I have only spent too much of my time during the last thirty years about the forge and after horses. I have gone the whole way from Liverpool to York for the purpose of seeing Lanercost, and I have spent more time and money with horses than I will ever do again.

Mr Dyer takes a glance at the forge, and makes some "*practical* remarks," which he thinks "go far to prove that the heel is not the first part to attach the ground." I confess I have little faith in the light to be derived from the forge in this question—a question which must be settled *exclusively by practical observation on the horse whilst in action.* Suppose I take up a shoe in the forge and find it greatly worn at the toe in comparison with the heel, am I justified, on that account, in concluding that the wearer of the shoe brought his toe to the ground first? Certainly not. If I did, I would just make as childish a mistake as the bootmaker would do, who would conclude that I did not place my own heel firmly on the ground, because I always wore out three pair of toes for one pair of heels on my boots. The fact is, it is not the laying down, but the grinding action of lifting, that wears the shoe. A horse that lays down the heel grinds *it* very little, because it is the natural and easy method, but he may grind the toe a great deal in the lifting. He will not wear the toe so much, however, as the animal which lays down the toe first. The action in this last case, as may be plainly seen, is so defective that it will grind both in laying down and lifting up.

Mr Dyer thinks the horse cannot lay down the heel first, because he is crippled in his action by having the shoe nailed too closely to the heel of the foot. I cannot see the force of this argument, because a shoe nailed too tight at the front, back, or middle, will cripple the horse; but if it proves anything on either side, it is in my favour,

inasmuch as the part which touches first, and on which the greatest weight, force, or shock comes, is the part which requires the most freedom and room. Any man may satisfy himself of this fact by wearing boots which pinch him badly at the heel. He will soon be lame. Neither do I think there is anything in Mr Dyer's observations about short shoes, thickened heels, and calkins. The injury produced by these depends chiefly on the great *irregularity* of their pressure. Mr Dyer imagines the injury resulting from these proves that the heels can "bear no pressure at all, when compared with other parts of the foot." Strange as it may appear, however, I arrive at the opposite conclusion, and believe that the unequal pressure can be borne better there than anywhere else. Let Mr Dyer take the calkins off the heels and attach them to the middle or toe of the shoe, and if he does not find that a machine of this description makes a perfect cripple of his horse, I will deny my name.

I cannot agree with Mr Dyer in supposing that "both he and I have few followers at this moment." So far is this from being the case that I am confident our opinions represent the sentiments of the great body of the community. The *public*, I believe, have always held the same views as those which are advocated by Mr Dyer, and I am happy to say that a considerable number of *practical horsemen* have fully adopted the idea of the heel action, since I published the opinion in the year 1848, in the *Londonderry Standard*, and, in the year 1859, in my book on *The Form of the Horse*, and a large proportion of the *more advanced veterinarians* have thoroughly acquiesced in the opinions about the planting of the heel, which were so ably brought before their notice in 1858 and 1859, by Mr Lupton and Mr Gamgee. The *old school veterinarians* still hold to the toe action; and, I suppose, their early prejudices will always keep them to the same point. There is this comfort, however, that beyond their own pale, I do not think they could get half-a-dozen men in the empire to agree with them in believing that the toe *ought* to come first to the ground. So completely is this view confined to themselves, that I never knew till the year 1861, that any man in the world held such an opinion. It was generally supposed, till 1848, that the horse should lay down his foot quite flat on the ground.

Mr Poyser has not thrown the least glimmer of light on any side of the question, and therefore requires no reply.

I may take this opportunity of remarking that, in the work *On the Horse*, which was published *last month* by Stonehenge and Lupton, two pages are devoted to the discussion of the toe-and-heel action. In place of putting me down as the originator of the idea of the heel action, in the year 1848, they have taken the entire credit of the matter into their own hands. Their conduct in this affair is to be regretted much more on their own account than on mine. Stonehenge claims that he brought the view before the public in 1855, and Mr Lupton before the profession in 1858. Now, it is quite impossible that either of them can be ignorant that I proved, in your *Review* for last

August, that I published the same view about the laying down of the heel in the *Londonderry Standard* for 10th March, 1848; consequently they must be aware that in this case they are acting as direct plagiarists. It is possible they may not have seen my letter in the *Standard;* but they must have seen it in your Journal. Their conduct is anything but honourable. It is also very short-sighted, because if they imagine, on account of their wielding an important portion of the public press, that I would let them pass in silence, they are wofully mistaken. They are both equally chargeable in this matter, on account of their work being a joint production. If Mr Lupton did not approve of what Stonehenge had written, he could easily have set it right in the preface which is attached to the book.—I am, &c.

JAMES C. L. CARSON, M.D.

COLERAINE, IRELAND,
Nov. 12, 1861.

The Vacant Secretaryship to the Royal College of Veterinary Surgeons. By M.R.C.V.S.

SIR,—I have thought the present a proper time to offer a few observations on this subject, through the medium of your columns.

The office of Secretary to our Royal College has fallen vacant for the first time since it was erected; and now for the question, What choice have we, and what should be the guide of those who are empowered to elect a successor to the retired officer? My observations must necessarily be addressed, in the first place, to the President, Vice-Presidents, and Members of Council; the powers for the time being, who must elect the successor to the only permanent office the profession, through its representatives, is empowered to confer. I am aware that the line of action to be followed, is to a great extent marked out by the wording of the Charter; according to which the Secretary, I believe, must be a member of the profession, and he must also have a seat on the Council Board; this last clause, together with the duties required in the office, implies that none but a member of high standing can be a proper person to wield so much influence.

Whilst I invite the board of officers and members of the profession to consider the subject, it is more with a view to some future contingency than for any action to be taken just now. I very much question the advisability of the secretary having a seat on the council, and as I shall presently endeavour to explain, I see no reason why he should be a member of the profession. There are many reasons why it is objectionable for the same person to be permanently on the Council Board; again, the office requires no professional talent, and the reason why I urge these points is, that there is not enough remuneration or inducement to retain the services of any person of standing in the profession; I anticipate that the choice will be very limited, even if a single member be found who may possess the

required qualifications, and the confidence of the members of the profession to the extent that would induce the majority to place such person on the council for the whole of his life, or during his own pleasure. I am one of more who believe, that on a proper and not distant occasion, it may be thought advisable to petition the Crown to grant a supplemental charter, and that the clause regarding the secretaryship is one that should then be revised. In making these observations I cast no reflections on the first framers of the charter, nor yet on the appointment of the first secretary; I believe, that that appointment could not have been better made; it followed, as might be expected, that the president, secretary, and council were all elected from amongst the members who had taken an active part in obtaining the charter, the best possible guarantee that they were the right men to elect. It is just possible that the framers of the instrument—the charter—had in view the person who in all probability would be chosen as the secretary, hence the permanent seat on the council board, which though unobjectionable for the time may prove highly so as an established rule. What are the duties required of a secretary?—Firstly, he is entrusted with all the correspondence, and to a great extent, the office requires the business work of a clerk ; the custody of the college rooms is in his charge, the nucleus of a library and museum, both of which it is hoped will gradually increase, are equally under his management; further, all matters which come under the consideration of the monthly and general meetings, form work to be executed by the secretary. Here, then, we see a great deal of subordinate work to be done by the officer, whose salary for some years to come must necessarily be inadequate to secure a first-class member of the profession; and an inferior one, I repeat, would not be worthy the high trust at present conferred by the special clause in the charter. I am for throwing the secretaryship open, as soon as that can be done. London would afford a large choice of men, of undoubted ability and character for such office. Many examples could be adduced to show the preference of the wide field for selection over one confined to the few individuals who would accept the office from amongst the members, but I will only adduce one. The office of clerk and dispenser at the London Veterinary College used formerly to be filled by a member of the profession, and we remember its being occupied by four different men in little more than as many years, besides intervals between the vacation and filling up the office, when the duties devolved on Mr Sewell, assisted by some student or other person he could choose. At length it was decided that no member of the profession should fill the office, nor yet be allowed to graduate as a student whilst so occupied. This change took place in 1824, and how well it has worked every member can bear witness to. After the lapse of 37 years, the second officer still holds the position. What took place at the Veterinary College must follow as a consequence at the Royal College of Veterinary Surgeons under the same proceedure; selection will have to be made from the elder members of the profession, or offered to

young aspirants on first leaving the colleges. Amongst the first we do not see an encouraging prospect of good choice; the fact of a man accepting the office for L.100 a-year, and to live rent-free, implies that he has not been successful in his profession sufficiently to make himself a position, an assumption of itself not a recommendation. If, on the other hand, the office must be given to the best amongst the young candidates, it will be made a convenience, a stepping-stone, the same as that of the Veterinary College used to be; every occupant of the post will be using the influence it gives in turning his attention to prospective openings: hence will follow, as the very undesirable consequence, frequent changing of secretary, and the duties of the office imperfectly understood, and the profession in a corresponding degree badly served. I must apologize for troubling you with so long a letter.—Yours, &c. M.R.C.V.S.

Glanders. By J. Horsburgh, M.R.C.V.S., Dalkeith.

My father was a smith and farrier in a country practice about five miles from this. He had learned with Mr Kennell, at the Crosscauseway, then the principal farrier in Edinburgh, whom he served for 18 months for nothing, or nearly so, to learn his art. There were no veterinary surgeons then. He assisted at taking the horses from Admiral Duncan's coach, and hauling it through the streets to his house in George Square, after he won the battle of Camperdown. He had a considerable practice as a smith; and when the farmers' horses took ill, or were lame, he was called in. If a horse was kicking, flinging, rolling, and tumbling, that horse was *very* ill: he was bled, a bottle of salt and water was given, and he was soon better. If, on the other hand, he was standing still, neither moving, nor eating, but coughing, his sides heaving, his legs and ears cold, and his nostrils distended, he was thought not *so* very bad; if he would only just *eat* he would be better. But that horse generally dropped, and his death could not be easily accounted for; his lungs were generally *rotten.*

My father had no knowledge of medicine; blisters and physic came all from the druggist. He could castrate as well as any V.S., but what the pulse was, ought to be, or where to find it, he knew not; and such were many of the farriers in his time.

He had farriers' books, which I used to read when a boy. Markham's *Masterpiece* showed how to make a white star on a black horse's face, by putting two pieces of wire crosswise, and tying a piece of packing-thread round the ends; or boiling a moudiwort (mole), and binding it on the place while hot. Bartlet's *Farrier* showed some plates of nicking, setting tails, &c.; but what particularly took my attention was La Fosse's method of trepanning for the cure of glanders, showing how the frontal and maxillary sinuses were to be opened, and the septum dividing them

perforated with a wright's brace-and-bit (an instrument superior to our trephine for that purpose). At that time I had no thought of ever trying such an operation, but after I became a veterinary surgeon, M. La Fosse's plan still ran in my mind, and if ever I had a chance at a horse with glanders, I was determined to take it. This was not easily got, as few will run the risk to man and beast that takes place in such cases. After many ineffectual trials, a case came in my way, about twelve years ago, which I gladly availed myself of.

Mr Wm. Binnie, then innkeeper at Caffrae-Mill, near Lauder, and farmer at Overhowden, where he now is, had a large establishment of horses for stage-coaches, which ran at that time from Edinburgh, by Kelso, to the south. Mr Binnie supplied horses for two stages of about 12 miles each; the nearest to this was Soutra-hill—as hard a road for horses to work as any in Scotland. From his youth upward he was as keen a racer as Britain ever produced. He always kept two blood-mares for breeding, bred some good stock, and won many races both in Scotland and England.

Farcy and glanders broke out among his horses, and in two years he lost a hundred. His breeding mares took the disease; I examined them, and with great regret they, too, had to be destroyed. They had two fine foals, fit for weaning, one of which is the subject of this paper.

Whizgig, by Wintonian; Dam, by Matlick; Grandam, by Manton, out of Lady of the Swale, had a considerable discharge from the right nostril, which continued till she was trained for racing. Mr Binnie, never doubting that she had glanders, intended to run her as long as she could. She won several good races, the last of which was at Stirling, and was engaged to run at Newcastle about three months after. She had a slight enlargement of the flexor tendons of the right fore-leg; and in being brought through Edinburgh, the late Mr John Williamson advised their being fired, as she had sufficient time to get well before her next race. Mr Williamson went to Gullane, where she was training, cast her with hobbles, and during the operation the mare strained her back, so that eight men had to carry her into the stable: her racing days were over. Some time after, and when she was able to stand, I went with Mr Binnie to see if anything could be done for her. I blistered her along the back, put on a sheep's skin, and, as it was likely she would stand some time, I proposed to have a trial at the glanders, which neither Mr Binnie, myself, nor any other man who knew anything about her, ever for one moment doubted the existence of. It was consented to at once. Next time I went to Gullane, I opened the frontal and maxillary sinuses with a large-sized trephine; this was easily done standing. I made an opening through the septum, to allow the matter to drain to the lower orifice, and treated her with diniodide of copper, both internally and as a lotion, to wash out the sinus with a large syringe. Both sinuses were full of matter. I kept the under orifice open for

several months, occasionally leaving off the medicine, and resuming it again. She had never discharge from that nostril again. Whizgig was perfectly cured, and remained so.

About twelve months after she got well, Mr Binnie, thinking she would not be safe to run again, from the strain in the back, sold her to Mr Paterson, farmer, tanner, and agent for the Royal Bank here, for breeding. Mr Paterson knew her whole case. She was kept here for more than ten years, and had several foals. She had been drilled with the Yeomanry. When not at grass, she was used in the bark mill. She passed my door several times every day from her stable to the mill, and she was never known to have the least symptom of glanders. I had made arrangements with Mr Binnie, that, whenever or wherever she might die, her head should be sent to me. She died last summer in possession of Mr Paterson, at Ewingston, and the head was sent. I herewith send it to you, perhaps it may be of some use when lecturing to your students on glanders, may stimulate some of them, in after-years, to improve on this rough outline, and enable them to treat this hitherto said to be incurable disease in horse and in man, with as great ease as ringworm and mange.

Two years ago I was sent for to see a mare belonging to Mr Garvie, Plenploth, near Stow. She had been long ill with a considerable discharge from the right nostril. She had been attended by Mr Currie, V.S., Crosslee, for about twelve months. I had no opportunity of ascertaining the mode of treatment that had been previously pursued. The maxillary sinus was so much enlarged, that it was level with the orbit at the eye; the frontal was also considerably heightened, and emitted a dull sound on percussion. The mare breathed with difficulty, and could not work. I opened both the sinuses; at least a quart of matter was discharged. I treated her nearly the same as the last, only I used iodide of potassium. She was soon able to work, and is now perfectly well.

About 18 months ago, a farmer and victual-dealer here purchased a half-bred mare from Mr John Somerville, a flesher, whose stables had been several times emptied by glanders. He had at one time the mail post-gigs, and stabled his horses in the stables of the Old Black Bull Inn, belonging to Mr Piper, Catherine Street, who has had hundreds of horses killed for glanders. She turned very ill. I had not the least doubt of the disease; I opened the sinuses. The discharge was very abundant, and her owner was afraid that some of the many horses coming about him with grain might become affected, and he blamed. I purchased the mare from him for 30s., treated her; she got perfectly well—had a foal twelve months ago. I have ridden her for twelve months, and she has no appearance of any disease whatever.

[Mr Horsburgh's communication is one which points out the imperative necessity of careful diagnosis. We do not believe that any one can cure *true* glanders, but not a few veterinary practi-

tioners have, from time to time, met with cases which have convinced them of the useless slaughter of horses *reputed* glandered; and Professor Delwart insisted not long since, in the *Bruxelles Journal*, that no horse could be pronounced as indisputably affected with incurable glanders before the plan of trephining and injecting the sinuses, &c., had been had recourse to. Not only do we admit that great loss has been incurred by a reckless slaughter of animals supposed to be affected with glanders, but we have already published our opinion on the point, and classified the diseases most likely to be confounded with glanders. There are diseases of the bones of the face, especially of the upper jaw from carious teeth; abscess of the turbinated bones; accumulation of pus in the sinuses, and collections of purulent matter in the gutteral pouches. But, on the other hand we have seen farcy and glanders in the cavalry regiments, British and Continental; we have been called upon to check it in a troupe of circus horses when raging with another contagious disease—mange; and the necessary and most economical method has been to shoot every animal so soon as very decided symptoms, either of farcy or glanders, are announced. To all army and veterinary surgeons we unhesitatingly say, try no experiments on glanders. Better shoot twenty horses, regarding which some doubts might exist as to the real nature of the disease, than leave a suspicious case in a troop. There is no excuse for carelessness in diagnosis, and we believe it unpardonable when an animal is shot, in such a case as that reported by Mr Horsburgh, and which he so properly treated; but, on the other hand, the experimenters on glandered teams are, we hope, of a past generation. The danger to human life alone calls for the prompt adoption of the only radical preventive.—Ed. *Edin. Vet. Review.*]

Notes on a Case of Protracted Indigestion and Accumulation in the Stomach, which resulted in Paralysis of that Viscus, Sympathetic Affection of the Brain—Staggers, Tetanic State, and Death, in a Bay four-year-old Gelding, the Property of ———. Attended at a Farm, near Kirkcaldy. Reported, with Commentary, by Joseph Gamgee, Sen.

In obedience to an order received on Wednesday night, 10th July last, I crossed the Forth by the first boat on the following morning, reached the farm about 9 A.M., found the colt lying prostrate on his off side, in which position he had continued since the night previous. He was lying in a clean, spacious, well-ventilated building. The

horse was labouring under a total cerebral insensibility, which I diagnosed as symptomatic, the character and source of the disorder being derangement in the alimentary canal.

Symptoms.—A thorough unconsciousness, whilst the limbs and whole muscular system were extremely convulsed. Pulse was strong, and numbering about 100 beats per minute. Respiration laborious, caused partly by the convulsed and tetanic state of the muscular system, and partly by another cause, which we will presently consider, the weight and pressure of a distended stomach.

Hopeless as I pronounced the case to be, I proceeded with some attempts to treat it, administered warm water clysters, by which I succeeded in removing some hardened fæces with which the rectum was loaded. I failed in attempts to administer anything by the mouth, there was no response to ordinary stimuli, and the act of deglutition could not be promoted. The tongue and lower jaw (the mouth being open so as to leave about half-an-inch space between the incisor teeth) were depending by their own weight and resting on the straw; on attempting to open the mouth wider, however, I was unable to do so, all the symptoms of tetanus were observable. I introduced warm water into the mouth by means of a bottle, and though none was swallowed, the attempt was frequently made. This I adopted as a soothing means, to which I generally have recourse in all such extreme cases. At the time I took these bland measures a liquid mustard paste was rubbed in over the region of the stomach, and extended over the lower part of the abdomen. No very obvious change took place in the patient during the first six hours from the time I arrived; though the rectum had been relieved of its contents, the action was mechanical, and not such as to indicate a sympathetic influence; the whole system was paralysed; the brain and nerves could not be brought to perform their functions.

I left the patient in the afternoon, and returned to Edinburgh; he died between six and seven o'clock in the evening, without any notable change having occurred for about 20 hours previously, beyond progressive exhaustion. The history of the case, so far as I could learn, was as follows:—About two months previously the animal was slightly ill with a sore throat, and was placed under the treatment of the veterinary practitioner in the district, who applied a blister to the throat, and some powders were given at intervals, the composition of which I was unable to learn, but was told by the practitioner that they were of a sedative nature, and contained some antimonial preparation. No aperient medicine, or even clysters, had been administered or prescribed at that stage, nor any restriction or modification of diet enjoined. About twenty days after the first attack, the horse was pronounced to have recovered, and was put to work again, but the carter who drove him perceived that he was still unwell, that he moved with difficulty, and that he turned his head round to his sides as if in pain. The animal's work was necessarily discontinued, and then five drachms of aloes were given

by the shoeing-smith. The former practitioner revisited the horse, and repeated the powders. About ten days previous to my being called to the horse, he had purged violently during several successive days, and the action had only abated on the Sunday or Monday preceding the Thursday on which I saw him. On the Tuesday a bottle of linseed oil was prescribed by the practitioner, and was administered accordingly. No evacuation of the bowels had taken place from the Sunday or Monday, when the excessive looseness or purgation ceased, up to the time I saw the patient. I left the horse in a hopelessly prostrate state, about five o'clock in the afternoon, having directed the attendants to proceed with all soothing measures, as long as life could be kept up. The animal died without exhibiting any obvious change, about an hour after I left him.

Post-mortem Investigation.—On the afternoon of the 12th I re-crossed the Forth, for the purpose of returning to the farm and making an examination of the subject. I was accompanied and assisted by Mr James Law. We found the subject lying on the right side, in the same position as he had lain immoveable from the time I first saw him. Though death had taken place about twenty hours, and the weather was warm, decomposition had only proceeded to a very slight extent, being chiefly confined to the cellular tissues about the head and neck. Some high-coloured serum was observed about the nostrils, evidently due to post-mortem transudation. Having removed the carcase into the open air, and placed it on its back, we proceeded to explore first the cavity of the chest. The lungs were perfectly healthy; the pericardium contained some serum; but neither that membrane nor the substance of the heart showed any lesion further than a slight flabbiness of the viscus. We next proceeded to explore the cavity of the abdomen ; the first thing observable was the enormous bulk of the stomach, which, on removal, was found to weigh, with its contents, 48 lbs. On slitting it open, a thoroughly masticated but undigested substance was exposed, which was found to consist chiefly of grass intermixed with layers of farinaceous substance, apparently of triturated oats. The stomach, when emptied, presented a very thin, relaxed appearance; its contents, we may observe, were dry and compact, as if they had been submitted to a hydraulic press. The large intestines contained a quantity of ingesta, similar to that found in the stomach, only in a fluid state, and remarkable for being intermixed with particles of sand and ashes.

Remarks on the foregoing Case.—Though I prevailed on the owner to forego the determination he had formed, of sueing the practitioner for damages, on the ground of neglect and maltreatment of his horse, I should not be performing my duty if I did not protest against the whole course of treatment pursued, both as regards that which was done, and that which should have been done, but was omitted. The malady, slight and of little moment at first, was pronounced, under that ambiguous term Influenza., to be an affection of the respiratory

organs. No doubt there was some little soreness of the throat, which local symptom had led to the application of a blister to the part, no proper and required treatment, nor even any heed, seems to have been taken of the animal's general system. Instead of a greasy irritating composition, locally applied, we should have administered a mild aperient, such as 5 drs. of Cape aloes, and at once have relieved the system by clysters, and should have restricted the diet, both as to kind and quantity of food. We should have probably repeated the laxative dose after the lapse of days or a week, as secretion and action of the alimentary canal might require such stimulant. I shall not pretend to pronounce on the propriety or impropriety of prescribing the powders, of the composition of which I was unable to learn anything reliable, neither am I able to say what caused the irritation and purgation that took place ten days previous to the horse's death; the administration, however, of a bottle of linseed oil in the latter stage, though not an uncommon measure in veterinary practice of the present day, is one that I regard as inefficient and unreliable, and unassociated as it was, in this case, either by clysters or restriction of diet, constituted what I must unhesitatingly pronounce to be practice such as should be avoided. A rationally adopted treatment could hardly have failed to restore that valuable animal, whose case presented nothing complicated or difficult to understand, or even to overcome up to the last three or four days.

Amputation of the Penis of an Entire Pony. By CHARLES HUNTING, M.R.C.V.S., South Hetton, Durham.

THE subject of the following remarks is a bay entire pony, eight years old, the property of the East Hetton Coal Company. The animal had for more than two years been subject to warty excrescences growing around the base of the glans penis, and involving about four inches of the organ above the glans. The excrescences were exceedingly large, measuring sixteen inches in circumference. For a considerable period they were kept down by the frequent application of caustic agents. The animal being employed, and being a very valuable one for the purpose he was used for, I had some difficulty in getting him out of the pit, until the urine acting upon these large warty growths (completely embedding the urethral opening), produced such an amount of disease, and so offensive a smell from the excoriated parts, that no one would use him. For several weeks after the animal came out of the pit he was treated in several ways, with a view of saving the "glans penis," if possible. No satisfactory progress, however, was made; and as it was clear that in a short time the animal would be as bad as before, I determined on removing the organ above the diseased parts. For this purpose the animal was cast, and fixed as for castration. The operation was then performed in the following

manner:—The penis was grasped with the left hand, an assistant moderately extending the organ by pulling at the "glans," I then severed the penis in two, about four inches above the part diseased, and about six or seven inches from the extreme point of the organ, still grasping the penis with the hand, and thus effectually preventing the loss of much blood, but if the grasp was relaxed, the volume of blood which rushed out was enormous. I therefore determined to ascertain what would be the effect of holding the penis for some considerable time with the hand, in permanently arresting the hemorrhage, as I once before tried pledgets of tow and the actual cautery, and found them worse than useless; either myself or my son continued to hold the penis with the hand for half-an-hour; after the first ten minutes the bleeding was much less when the grasp was relaxed; at fifteen minutes it was less still, and every five minutes it was perceptibly diminishing, and at thirty minutes nothing more than a few drops of blood escaped when the hand was removed. Not a single symptom of pain or inconvenience followed the operation, not even when passing his urine, which he did as freely as ever, until ten weeks after, when I was informed by the horse-keeper that the pony was very bad, rolling and kicking about violently. When I saw my patient he was suffering, and making frequent ineffectual efforts to pass his urine, I therefore passed the urethra, a number six catheter, which immediately gave the animal relief. I was at first suspicious that the obstruction arose from the closing of the urethra itself, but this was not the case, the opening which was much smaller than in a normal state, being simply choked up with a large quantity of yellow sabulous matter. The animal has been working well for the last six weeks, and no further inconvenience in passing the urine has occurred than of being rather longer in the act than he was before.

Melanosis in a Horse. By A. J. MURRAY, Assistant to Mr Charles Hunting, M.R.C.V.S., South Hetton, Durham.

As cases of melanosis are by no means common, and when the disease has developed itself in internal organs, the symptoms are of an obscure nature, it is therefore desirable that the cases which do occur should be recorded for the information of the profession. Mr Hunting was called on Sunday, 13th October, on which occasion I accompanied him, to see an aged grey cart-mare, the property of Mr Richardson, a farmer near this place, which presented the following symptoms:—Occasionally pawing the ground; lying down hurriedly, and supporting the fore and hind legs against the side of the stall, and stretching out the neck and head, then suddenly rising up again; legs and ears extremely cold; conjunctiva of a slightly yellowish tinge; occasional sweating; respiration accelerated, and occasional heaving at the flanks; pulse imperceptible at the jaw, but action of the heart 140 in

a minute; the bowels had been in rather a relaxed condition for some days previously, and, on an enema of warm water being given, a small quantity of dark-coloured fæces and a considerable amount of flatus were brought away. From the symptoms presented, and especially from the frequency of the pulse and the sound of the heart, Mr Hunting came to the conclusion that the mare was suffering from disease of the latter-mentioned organ. She was bled from the jugular, but only a small quantity of dark tar-coloured blood was obtained. Mr Hunting, after his examination of the mare, considered the case to be a hopeless one; but, at the request of the owner to do what he could, ordered that the breast and side should be blistered over the region of the heart, and

Tinct Aconit., M xxx.
Aqua, ℥ viii.

to be divided into four parts, one to be given every two hours; but, before the time had arrived for the administration of the second dose of aconite, the animal fell down and expired.

A post-mortem examination was made on the following day, but, before doing so, it was observed that the mucous membranes were remarkably pallid, indicating that some blood-vessel had been ruptured. The abdominal cavity accordingly was found to contain a large quantity of blood, resulting from rupture of the posterior vena cava. The liver was about four times its natural size, and thickly interspersed with small portions of melanotic deposit, which gave it an appearance not unlike that of a rich plum-pudding. Spleen enlarged, its structure being easily broken down. The stomach and intestines were healthy; left kidney much increased in size, remarkably soft—as easily broken down with the finger as a clot of blood. The diaphragm, on its abdominal surface, had some small portions of melanotic deposit adhering to it. The heart was considerably smaller than the natural size, and the walls were so thin and so soft that the fingers, with the slightest effort, could be thrust through their structure. The lungs presented a healthy appearance. For two or three weeks previous to death, the mare was observed by its owner not to thrive, although doing little or no work, but previous to that time she had done her usual work on the farm, while the internal organs already mentioned were doubtless the seat of extensive and gradually-increasing disease.

Clinical Lecture on Diseases of the Teeth in Horses, delivered on the 4th of November. By John Gamgee, Principal of the New Veterinary College, Edinburgh.

Gentlemen,—It is not a little remarkable that such cases as abscess in a tooth socket, or common caries affecting a tooth in a horse, should constitute stumbling-blocks to veterinary practitioners, which

have hitherto almost invariably proved insurmountable. In man, teeth are readily drawn, and an end is at once put to pain and the progress of disease. In the horse, however, such is not the usual result. In the first place, the nature of the disease is not often recognised. A tumour seen on the face is attributed to some local disease of an indefinite nature; a discharge, peculiarly fetid and troublesome, flows for months from a nostril—a wound which resists every method of treatment, is observed on the side of the face or on the lower jaw, but because the horse has not been able to speak and declare that he is suffering from toothache, the origin of either of the above diseases is involved in mystery, and they often end in animals being destroyed as dangerous, troublesome, or useless. Perhaps in some few cases a practitioner, more intelligent than the rest, discovers the cause of the troublesome symptoms, but has not the advantage of securing a dentist, or of instruments whereby he can himself cure the disease.

You will find that I have drawn special attention to the subject in the volume already published of *Our Domestic Animals in Health and Disease.* I might quote a large number of cases in which disease of the face and nose have proved incurable from the teeth having been overlooked, and to this class of cases I am inclined to attribute those mentioned in Mr Percivall's *Hippopathology* under the head Tumours of the Face. Mr Percivall says:—

"Those who are much among young horses will have occasionally observed osseous swellings arising from the side of the face, midway between the eye and angle of the mouth. They grow from the superior maxillary bones, have a rounded form, and are broadish at their bases, with hardly any perceptible heat of surface, and very little tenderness on pressure. Sometimes one appears; oftener, I believe, there exist a pair. What their origin may be, I know not, unless they be the effects of blows. In composition they are evidently osseous, or osseo-cartilaginous; in fact, they are veritable exostoses. They are nowise hurtful or injurious; but they extremely disfigure the countenance of the animal —they give him a sour, ill-tempered look, and on this account are often sought to be got rid of.

"A three-year old horse came to my regiment, out of the dealer's hands, with a tumour of this description upon the off side of his face. Not liking the appearance of it, the colonel was desirous I should get rid of it. I blistered it repeatedly, I next tried the effects of an iodine ointment upon it; all to very little purpose, however. It was thought to have diminished; but this in truth was very little. I had a notion that stripping it of its periosteal covering, and leaving it bare, might cause it to exfoliate away; but this seemed to be attended with some danger of sloughing open the maxillary sinus, and therefore the project was abandoned.

"Mr Charles Percivall, V.S., Royal Artillery, has sent me the following account of the same disease:—

"A four-year-old gelding came into the Horse Infirmary at Woolwich, with a tumour upon the maxillary bone of the off side, followed, some days after, by enlargement of the submaxillary glands, and discharge from the nose on the same side. The swelling was painful on pressure, and my first idea of its nature was, that it had proceeded from a blow. Cold applications were made use of; ultimately it was blistered. This caused it to suppurate and discharge a glairy ill-conditioned sort of matter. At the expiration of three weeks, the near side of the face commenced swelling in the same manner, which convinced me I was

wrong in imagining the other tumour was caused by injury. The same treatment was pursued, but this did not suppurate. I then used the iodine ointment, which appeared to diminish it. The tumour upon the off side became fistulous, continually issuing the glairy matter as at first, and giving evident signs that the bone within was in an unsound, most likely carious, condition."

If the quotation has been long, gentlemen, I think it has been well-spent time to notice specially the mystery with which the subject we are considering has been involved up to the present day, notwithstanding the intelligence even of such men as Mr Percivall.

Since the establishment of this College, I have had many very interesting cases which admirably illustrate the history of disease of the teeth in horses. Before making any general comments, I shall turn your attention to three. One, because it was the first in which I used an efficient plug, and two others as the last, and in which you have witnessed the operation.

On the 7th of July, 1858, a bay horse, the property of Mr Stark, horse dealer, was admitted in the College Infirmary. He had been purchased at Northallerton fair, about a year previously, and had, at that time, a small wound on the right side of the face, recognised as unimportant. The owner, however, found that the persistent discharge and fœtor of the latter interfered much with the animal's value, and advice was sought. During the period which intervened between the purchase and entry of the horse into our Infirmary, he had been cast repeatedly and treated, at the Clyde Street College and elsewhere, by incisions, caustic, &c., but all to no effect. I recognised at once that the fistula was connected with the disease of the superior maxillary bone, over which the tissues had become thickened, and the periosteum detached over the portion of dead bone. The horse was cast on the 9th of July, and having introduced a grooved director, I slit up the sinus and exposed the maxillary bone, which was roughened and black immediately beneath. By scooping with a gouge, I ascertained that the layer of dead bone covered the diseased fang of the second molar tooth, and after removing it, I struck the tooth into the mouth with a hammer and appropriate chisel. The animal was then allowed to rise, and was carefully fed to avoid accumulation in the socket. The parts were thoroughly washed out day by day, and on the 21st of August, the horse was discharged cured. Up to the day of his discharge, food accumulated in the socket, though the latter had partially closed up, and I feared that the animal would suffer from the accumulation unless attended to. Accordingly, on the 2nd of September, he was again brought to the infirmary, owing to the food having caused a laceration of the skin and fistula. I then washed the socket thoroughly, and, after contriving several devices which proved impracticable, I plugged the socket with gutta percha, which I moulded most carefully into the space when warm. The horse was discharged on the 8th of September. This answered beyond my expectations, and only recently I inquired about the horse, and learned that he was still very well. I may mention that the dealer sold him at an excel-

lent price almost immediately after his removal from our stables, and I believe he is still in the hands of the gentleman who then bought him.

The second case was that of an aged cart-horse of the Clydesdale breed, the property of a farmer near Dunbar, which had been suffering for about two years with a wound on the margin of the lower jaw, a little behind the chin on the near side. This sore, surrounded by thickened tissues, led into a channel which freely communicated, through a diseased tooth, with the mouth. Every method which the country practitioners in the vicinity could devise had been adopted, but all to no avail, and the animal was sent to the New Veterinary College. On the 19th of July it was cast, an incision made through the swelling around the wound on to the bone, several diseased portions of the latter were removed, the fragments of a diseased tooth completely extracted, and the animal allowed to rise. By keeping the wound clean the parts healed to a considerable extent, and in a few days the space left void by the removal of the tooth was filled up with a gutta percha plug. The horse was discharged cured on the 3rd of August ult.

The third case is still under treatment at the New Veterinary College, and was the subject of operation before you on the 7th inst. An aged bay gelding, the property of a firm in town, has for several months been suffering from disease of the fourth upper molar tooth, producing disease of the bones of the face and nasal discharge on the near side. Two attempts had been made at the Clyde Street College to remove the diseased tooth, but these having failed, the animal was sent to the New Veterinary College Infirmary. The horse being cast, an incision was made above the fang, and a large opening into the socket made by a circular trephine. A quantity of fetid discharge immediately burst through the opening, and with what relief to the animal this pent-up matter made its escape may well be imagined. Not without some difficulty, and adapting punches of various forms, the tooth was removed entire, and its condition explained the nature of the disease from its commencement, as well as the reason why the old methods, which had been perseveringly attempted, had proved perfectly useless. In the first place, the fangs, spreading so as effectually to fix the tooth, had been the subject of inflammation; their pulps were destroyed, and the accumulation of matter had led to the destruction of bone and communication with the nasal chamber, through which the fetid discharge had taken place. Moreover, the disease attacking the root of the tooth had stopped its growth, so that the crown had been worn on a level with the gum, admitting of no purchase in the use of any instrument. The discharge has already (9th November) nearly ceased, and in a few days the plugging will put an end to the troublesome consequences of a case which, if occurring in man, would have been considered most simple, but in the horse incurable, except by recourse to a bold operation.

[At this period (November 25th), the horse, still in the infirmary,

is making rapid progress towards recovery. The external wound is nearly closed, the socket evidently filling up by granulation, and any slight discharge from the nose is free from smell, and evidently due to the granulating process which is going on around the wound.

I have to add another case in which I operated on Saturday, 24th inst. I received a letter in the morning from Mr William Anderson, of Glasgow, to proceed to that town as soon as convenient, to operate on a horse that had been suffering from nasal discharge for a considerable time. I at once repaired to Glasgow, and found the subject, a bay saddle horse, 6 years old, with an abundant and fetid discharge from the near nostril. The horse being cast, I found, as Mr Anderson had stated, that the fourth upper molar was diseased. Having made an opening with a large trephine immediately above the fang of the tooth, a quantity of fetid pus escaped; the diseased fangs being exposed, and the wound enlarged, to facilitate the application of punches, the tooth was forced into the mouth. A difficulty, however, presented itself from the length of the tooth, and for a considerable time we could not get the tooth in such a direction as to free the fang from the alveolus. This at last being accomplished, and the operation therefore at an end, the hobbles were removed, but unfortunately the horse had strained his back in one of the struggles, and was unable to rise.

Mr William Cockburn—one of our examiners—and Mr Marshall, both Glasgow practitioners, were present, and can testify with me to the excellent manner in which the horse was cast on a very ample bed of straw, under Mr Anderson's superintendence. Mr Cockburn suggested, to my mind very justly, that the horse had fractured the spine in the first struggle, when I applied the trephine, as after that, Mr Cockburn had remarked how quietly the animal was lying. This case, like all others of a similar kind, proves how impossible it is for the veterinarian to avert such an untoward accident.]

Gentlemen, my experience in cases of the description I have related proves that there is but one way of treating the many troublesome complications which arise in cases of caries or abscess at the fang of the tooth. That method consists in cutting down and striking the tooth into the mouth, treating the case judiciously so as to allow the parts to close together as thoroughly as possible, and then to plug the socket with gutta percha.

I am sensible of the ingenuity displayed by Brogniez, Gowing, and others, in the construction of tooth-forceps, but these have failed in the cases which have been operated on by myself. A horse's tooth has not a well-defined crown or neck; the crown is often worn to the level of the socket in disease, and the fang is well known to be of great length, and firmly implanted. Moreover, as the result of disease, the tooth is often split up, and great difficulty is experienced in these cases to remove the fragments which remain firmly implanted in the socket, and stumps lie buried to keep up the irritation, and prevent a radical cure.

Cases like the above are so common, and so constantly left to nature and the slaughter-house, that they cannot be too publicly known. I unhesitatingly say that no form of facial disease is incurable which can be traced to diseased teeth, yet many colts are deprived of life from neglect in the treatment of tooth affections; and I am within reasonable limits when I say that many hundred horses have been condemned for glanders which only suffered from the disease existing in the third of the foregoing cases.

You will find that I have given a full history of diseases of the teeth in my new work on *Our Domestic Animals*, and I trust that we shall soon have vast improvements suggested by the treatment of cases, such as you have witnessed. As in most other affections, a correct diagnosis is the first point to aim at, and having determined the nature of the disease, hesitate not to adopt means which have been so successful in my hands.

On the Theory and Art of Shoeing Horses.

(*From the Scottish Farmer and Horticulturist.*)

Concluded from page 655.

A SHORT notice on the first and important step in the process of shoeing—viz., the preparation of the horse's foot—will help to make clear some of the remarks we made in our former paper. A thorough knowledge of how to perform this part of the art of shoeing presupposes an intimate understanding of the whole process; the moulding or giving form to the shoe, may be always well done when the workman has an understanding of what is required. In no two horses are the feet exactly alike, yet in their essential functions all act and are governed by the same law. If the subject were well understood, since there are not two ways of telling the truth or interpreting a physiological law, there would not be a thousand different opinions in the same country, as to how a horse's foot should be cut and carved away every month. Avoidance of these, and the well-doing of what was required, would be easy. The movements of the horse's foot and limb require that the plantar or bearing surface should come to the ground in a given line at every step; but that natural requirement is very rarely preserved, and when it is so, it is more by accident than rule. There is a very taking phrase always used by people who wish to be thought wise about shoeing, viz., that the shoe is to be fitted to the foot, and not the foot to the shoe. If there be any truth in that saying, it does not lie so near the surface as is generally supposed. In preparing the horse's foot to be shod, the requirement in the skill of the operator above all is, that he should know the right form and required bearing surface of that particular foot; he has, in fact, as much to give the bearing surface to

the foot, as he will afterwards have to adapt the shoe to it; the foot-surface and that of the iron shoe to be applied are entirely dependent on the skill and understanding of the shoer, and on these mainly depends the success of the whole process. We will go a little farther in explanation: when we have adjusted the foot, whether it be a sound or an unsound one, we proceed to adapt our shoe accordingly, and if the understanding and manual skill are efficient, the shoe will be brought to the foot in every way moulded to its requirements. In approximating the two surfaces, which is always done once or twice, and, if necessary, more frequently, till the adaptation is complete, we just as much review the foot as we do the shoe, and may in the critical process with as much propriety file away a little hoof as we may in another case bend the iron under the hammer. In either case, it is necessarily an adaptation of surfaces; the foot in the first part of the preparation being approximately finished, as the shoe when first tried is the same. In answer to the question, What parts of the hoof are to be removed? we should say *none*, only so far as is necessary to give the circumference and due proportion to the whole hoof. This we may say cannot always be effected; unfortunately, as horse's feet come to our hand, we find such deficiency, through destruction of parts, and not unfrequently a general debility throughout the whole hoof, that we can only make the best use of what remains.

Amongst the most common deteriorations in form, under the present custom of shoeing, is a low weak state of the hoof across the quarters—that is, taking a transverse line across the centre of the foot, immediately under the line of bearing. This low and weak state proceeds from two causes—first, from the method of preparing the feet; secondly, from the way they are shod, so that the iron gravitates, nay, is often converted into a lever, the fulcrum of which is in that centre, alike in both branches of the shoe, and the hoof is worn; or, as is said, ridden down by the pressure. Another common defect is the foot being higher on one side than the other, and thus every part of the foot and limb is thrown out of its natural line of bearing. Then we have many disturbances in the line of obliquity which the foot in its natural state should bear to the limb; we find variations of half an inch or an inch in the depth of the heels, under different modes of preparing the foot, and a similar extreme at the point constituting what is called length or shortening of the toe; all these, which nature has ordained to be exact, are found to vary by the inch, and the defects are variously complicated in the same foot. To know how to prepare the foot implies an understanding of all these deviations. We may be asked, Are there no parts of the foot to be removed and others to be conserved besides that which comes under the general meaning of proportion in depth, breadth, and length of the whole? We say, no. In adjusting the foot we have to deal with the wall, and if that part is well done and the foot well-shod, the other parts—viz., the sole and frog—are necessarily taken care of; though the horn

is secreted constantly on those parts like that of the wall, to meet the wear, the process of detaching is different; the sole and frog detach their outer layers as they become superabundant. When, however, as is commonly the case, the foot is badly prepared and badly shod, the sole may become, as it does, imprisoned by an overlapping of the wall, and want of the general natural functions of the foot; then the process of exfoliation may be interrupted, the proper remedy in which case is not to hack and sink holes into the sole, but to restore the balance in the whole foot by removal of disturbing causes. The instruments at present in use with us, for preparing the horse's foot, are of the most ill-adapted kind; and here we are prepared to be met by the observation that a good workman will effect his object with any tool; it would, perhaps, however, be more correct to say that an able artist will generally devise a proper instrument to effect his object. Two instruments are used for the reduction of the hoof, the drawing-knife and rasp; these are both of modern introduction for that purpose, and, as applies to the old world, they are confined to our country. These instruments are coeval with a doctrine of shoeing which has prevailed for between sixty and seventy years; previous to that time, an instrument similar to that in use up to the present time all over the Continent, called a buttress, was adopted in Great Britain. To the late Professor Coleman is mainly due the abolition of the buttress and substitution of the drawing-knife. The reason assigned was that the old one was an ungainly, clumsy tool, and certainly, to perform what the new doctrine in shoeing was requiring, it was not the instrument. It was laid down as a rule that the sole was to be cut away; that it was to be pared thin every time the horse was shod; that there were certain parts called bars that were to be preserved, which consisted in neither more nor less than a carving away of the sole almost to the blood, and leaving a small ridge at each angle, between which the hook of the drawing-knife was freely used to scoop out what was called the seat of corn. The little drawing-knife, bent so as to reach to every crevice and angle of the foot, was just the destructive instrument to do such work, but was in no way adapted to adjust a foot for the shoe; indeed no one ever used it, or does so now, for that purpose. The rasp is used for lowering the wall; there is a point where the work of those two instruments meets; the little crooked knife clears away and destroys the sole, leaving a thin edge of the wall, which the rasp sweeps away. A rasp or file was long in use with us, as it is now on the Continent, but little use is made of it there, since the buttress, a broad cutting instrument, gives a much better bearing surface to the foot, and the file is used to a small extent only in finishing the work. We may give some notion of the adaptation of the old instrument, the buttress, and the thorough unfitness of the drawing-knife for the same office, by a few comparisons.

Every one knows that if he wants to form an exact surface or line, he does not choose a very small instrument, but one of breadth and

length; a joiner does not use his chisel, but his long plane, to strike a plain, smooth surface; a man who carves handsomely and economically a joint of meat does not take his pocket-knife, but one with a broad, well-adapted blade; a man who cuts leather uses a broad instrument, and he can do it with exactness. We may go further, and adduce the tailor's large shears as he divides his broad cloth. The fact is, the little instrument makes notches and holes, destroys and weakens, and this has been pre-eminently the case in the application of the drawing-knife to the destruction of horses' feet.

We will, in conclusion, say a few words as to how this change was effected. To abolish an instrument from the land, which was well adapted for the requirement, and to introduce into general application one which we hold to be ill adapted, seems difficult to account for. The fact is, at the time the London Veterinary College was first established, nearly seventy years ago, and subsequently, its Principal was able to carry any point, almost at command; the power was displayed in the army, through which changes in the plan of shoeing were rapidly carried, and there the buttress was at once abolished and the drawing-knife substituted; the same thing followed through all the principal forges, and since the scooping out of the foot was pronounced to be a requirement and insisted on, compliance on the part of the workmen to use the drawing-knife was the more readily exacted. Subsequently, the rasp manufacturer adapted that instrument, so that instead of the little fine-cut rasp and file of the former times, a sharper, rougher, and bigger instrument was introduced, with which a strong man could reduce the hoof and even destroy it with a very few sweeping strokes. How we are to get back to a more rational system than now prevails is the work to which we have to put our shoulders.

Notes on the Height and Form of the Renowned Horse Eclipse.

(From the Scottish Farmer and Horticulturist.)

It will be remembered that about a year ago, the skeleton of Eclipse having been purchased from the late Mr Bracy Clark, by the supporters of the Edinburgh New Veterinary College, some correspondence took place with reference to its identity, the form, and merits of the horse.

The skeleton had been for many years secluded in Mr Clark's private study, and seventy-one years had passed since the horse died, so that few people had seen the relic, or knew of its existence; hence a reasonable curiosity was excited as to the identity of the skeleton and all other matters regarding it. During the past summer the skeleton of Eclipse has been the object of minute study, and it has been carefully measured and drawn.

As a result of these investigations, some very important errors which found their way into M. Sainbel's essay on the proportions of Eclipse have been detected.

Charles Vial de Sainbel, a French gentleman, of the Lyons and

Alfort Veterinary Colleges, was the first Professor of the London Veterinary College. Shortly before his appointment he had been employed to dissect Eclipse, whose death took place on the 25th February 1789. Taking advantage of the opportunity, he published his essay on the geometrical proportions of the famous horse—an essay which has generally been referred to as the best, and indeed only one, existing on this subject in the English language.

Heartily do we render homage to the anatomist for having preserved to us and other generations the only part on which a correct judgment on the proportions of Eclipse can be formed—the skeleton —for after seventy-two years these bones are available for the correction of mistakes which have been promulgated by means of the author's published descriptions.

As few readers of the present day have read Sainbel's essay, it may not be readily seen how errors therein propounded can in any degree have affected the judgment of men of our time. But the fact is, our teachers had read Sainbel's work, and, without ascertaining for themselves the value which ought to be attached to the statements of the author, they assumed them to be correct, and taught them without ever referring their pupils to the original work.

Sainbel in his work described Eclipse as measuring in height 66 inches at the withers, and an inch higher, or 67 inches, at the rump. Reducing these to our familiar measurements, we get $16\frac{1}{2}$ hands at the withers, and 16 hands 3 inches at the highest point posteriorly. As measurements and the use of figures are usually considered the most accurate modes of communicating information, the correctness of Sainbel's measurements never seems to have been seriously questioned. But they are quite erroneous nevertheless. The skeleton of Eclipse measures exactly 15 hands $1\frac{1}{4}$ inches in height, and is precisely the same height before as behind. From the above measurements, we consider the height of Eclipse to have been about 15 hands 3 inches, and that he was a level, beautifully-formed horse. If we were asked to point to any horse amongst his numerous descendants which presented most points of resemblance to him, we should name Sir Hercules.

We have little to say about the errors committed to print by Sainbel in the essay alluded to; nor can we attempt to discover the source of so much miscalculation, which, for kind and quantity, reduced the whole essay to a tissue of error, to which no value can be attached.

The late William Percival, in his interesting work on this subject, *Form and Action of the Horse*, published in 1850, quotes largely from Sainbel's essay. And though hesitating, and expressing difficulty in reconciling Sainbel's figures, he, notwithstanding, in the main, adopts the scale, as the following paragraphs will show:—

"All who feel interested in the annals of racing, and in that science which makes us, on geometrical or mechanical principles, acquainted with the form and action of horses, cannot fail to seek

with some eagerness what can be learned about 'the best horse that ever lived;' and every such person must feel a debt of gratitude to St Bel for having, so far as he has, rescued the remains of Eclipse from oblivion, in having left us *data* concerning his shape and action in number and nature sufficient to enable us at this distant day to infer what kind or description of a horse the paragon of racers must have been.

"We are told by St Bel that Eclipse measured 66 inches—16½ hands—in height; and that he stood higher by an inch behind than before; and that this great height was still exceeded by the length of his body, that being 3 inches more, or 69 inches. It is but rarely that we behold a horse of these dimensions, even among the big Derby colts of the present day; and when we come to add fair proportion, and power, and energy, to this gigantic frame, we shall not feel so much surprise at his wonderful exploits."

Leaving Sainbel's figures, and the description in the text, we may make a few observations on the diagrams illustrating his work. Looking at that imaginary outline, the figure might pass for the representation of a tall third-class coach-horse, but nothing approaching the form of a deep, lengthy blood-horse, such as Eclipse was.

Erroneous teachings on the form and action of the horse, since the time when Sainbel published his essay, have greatly misled the judgment in all matters about horses; and not the least amongst the errors which have grown up has been that of producing different classes of horses of too great a size.

Modes of expressing ideas on the form of horses amongst practical men are traceable to this source of error. Professor Coleman used to lay it down in his lectures that the horse should be high and powerful behind, light and short in the fore-hand. The hind extremities of the horse have been called the propellers. People speak on this subject as if nature had made the fore limbs passive, and the hind to propel them, instead of all being symmetrical in the well-formed horse, in which exertion is equally distributed through fore and hind limbs. The tendency has been to draw a line of distinction between the meaning expressed by the words, a pretty horse and a good-shaped horse. To our understanding they mean the same thing; our experience teaches us that Nature combines beauty in the horse in proportion as he is well developed for use. How much better the oldest authority we are accustomed to consult on these questions expressed himself, than some of the writers to which we have just referred:

"If the point of the shoulder is high, it gives the rider a safer seat, and makes the connection stronger between the shoulders and body. If this part is broad, the seat is better, and it is more beautiful to behold.

"When the side is deep and swelling towards the belly, for the most part it makes the rider's seat more easy, and the horse appears stronger and fuller of flesh. When all parts of a horse are firm and solid he is lighter for the course, and consequently more speedy."—*Zenophon's Treatise on Horsemanship.*

EDINBURGH VETERINARY REVIEW

AND

Annals of Comparative Pathology.

THE ABUSE OF NARCOTICS IN VETERINARY PRACTICE.

To prescribe for the relief of pain is a natural and laudable object, and the impression produced on most persons by an animal in agony is such as to suggest that immediate means be adopted to soothe even though the animal be rendered unconscious or lifeless.

But medical men and veterinarians know that to treat a symptom is often irrational—that pain must be endured for a while in order to obtain a satisfactory result, and they even apply remedies which inflict the greatest suffering with a view to arrest disease. Pain is the one great symptom by which an animal is made aware of a diseased condition affecting its system; but it is associated with other signs, and by a correct appreciation of the whole the nature of the malady is determined by the professional man. Rather than treat any special symptom, it is a wholesome rule, though not without exception, that it should not individually arrest the attention of the practitioner, and remedies be administered for the relief of that symptom.

The cause of a disease must be removed when practicable, and all symptoms, as a necessary result, subside. Toothache is eased by a narcotic, but only radically cured by stopping the disease or removing the tooth. The torture to which a choking animal is subjected can only be stopped by removal of the offending agent, and the exquisite pain of a foreign object in the eye calls for similar treatment.

We find, however, that within the last thirty or forty years the practice amongst British veterinarians has been to select from the list of narcotics and sedatives a remedy which is most efficacious in soothing pain, and checking all symptoms which are mere manifestations of that pain. That the practice has not been good or successful is proved by the fact, that gradually the favourite remedy has been discarded, and its disastrous effects have thus been magnified beyond, perhaps, reasonable limits. How few at the present day employ digitalis as of old, and would venture to follow the advice given to all who studied within the first quarter of this century, regarding the

value of this drug in *lowering the pulse.* Hellebore, opium, belladonna, hyoscyanus, aconite, and others, have in succession been regarded as most valuable in all painful disorders. But the uncertainty with which they have been administered, the untoward results, in many cases, rendered practitioners anxious to try any new drug of the class, often forgetting that they are all of great value in special disorders, though none can be selected for universal use.

Following in the steps of medical men, and aiming at novelty, it is undoubted that veterinarians have seriously erred; and a new era is dawning, when the confidence to be derived by an improved knowledge of the healing art, as applied to animals, will deter the anxious practitioner from a meddlesome system of giving dose after dose of various sedatives and narcotics.

It is undoubted that we cannot borrow from human therapeutics rules to be applied in the administration of medicines to horses and other animals. It is true that there are some fundamental laws, which guide the prescription of drugs to man and animals, but because opium is of value in man, at any time, to afford repose, it cannot be given in the same way to the horse; and if, in such diseases as colic, the greatest advantage is derived by the physician in prescribing a strong dose of morphia, it is found that in veterinary practice death too frequently results.

Admitting that opium is invaluable in diarrhœa, in spasmodic coughs, &c., it is found that, as frequently prescribed, it arrests the action of the large intestines of the horse, and a fatal result may frequently be anticipated. That result does not always follow promptly on the administration of the drug, but when the soothing action of the remedy is lost, the bowels are still torpid; irritant matter still adheres to their mucous lining; a purge is given, but with no effect, or, if the small intestine is rendered the seat of active secretion and excited peristaltic action, it is found that the fluid and fetid excrement forces its way only through a solid wall of hardened fæces in the colon, which might have been removed by a simple purge at first. Thus, after repeated doses and much delay, the animal *may* recover, thanks to its vigorous constitution, but often it lingers on and dies.

Great changes in veterinary practice are fast approaching, and intelligent men will recognise the value of simple remedies, and a wholesome reliance on nature's efforts. We do not admire the manner in which aconite and similar agents are given for the sake of doing something.

MANUFACTURE OF CATTLE FOOD.

It is a well-known fact that many intelligent persons have been made the dupes of advertisers, and continue to this day to spend large sums of money in purchasing foods believed to *improve* health. A cattle condiment, which has captivated even a few members of our profession,—not for their own horses, but as a means of securing a handsome bonus,—is stated to be composed as follows:—

		c.	q.	lbs.	Wholesale cost price. L.	s.	d.
Carob (locust) Bean, finely ground	at L.6 per ton	6	0	0	1	16	0
Indian Corn	at L.7 „	9	0	0	3	3	0
Linseed Cake	at L.10 „	3	0	0	1	10	0
Powdered Turmeric	at 6d. per lb.	0	0	40	1	0	0
Sulphur	at 1½d. „	0	0	40	0	5	0
Saltpetre	at 4½d. „	0	0	20	0	7	6
Liquorice	at 10d. „	0	0	27	1	2	6
Ginger	at 6d. „	0	0	3	0	1	6
Aniseed	at 8d. „	0	0	4	0	2	8
Coriander	at 8d. „	0	0	10	0	6	8
Gentian	at 7d. „	0	0	10	0	5	10
Cream Tartar	at 1s. 3d. „	0	0	2	0	2	6
Carbonate of Soda	at 4d. „	0	0	6	0	2	0
Levigated Antimony	at 6d. „	0	0	6	0	3	0
Common Salt	at ¼d. „	0	0	30	0	0	8
Peruvian Bark	at 3s. „	0	0	4	0	12	0
Fenugreek (Trefoil)	at 7d. „	0	0	22	0	12	10
Total		20	0	0	11	13	8

Dr Voelcker mentions this food as follows, in a Report to the Royal Agricultural Society:—

"Independently of the slight colouring with turmeric and flavouring with liquorice, coriander, aniseed, &c., and the medical compounds as before set forth, the main bulk of these manufactured foods is composed of the carob bean, Indian corn, and linseed-cake. These form nine-tenths of its substance; and it is worthy of note that of these by far the most valuable, in point of both price and feeding quality, is linseed-cake, and this is used in the smallest proportion. If, however, the farmer chooses to pay three or four times as much as the intrinsic value of an article, it is of course at his option to do so; but, inasmuch as the main object of farming is a remunerative profit, it passes my comprehension to undestand how that object can be gained by feeding animals on substances that cost from £40 to £50 per ton.

"The above ingredients, throwing aside all the medical and flavouring compounds, give, upon analysis, the following results:—

Water,	13·01
* Nitrogenous (or flesh-forming substances),	14·97
Fatty matter,	5·78
Starch, sugar, &c.,	54·40
Indigestible woody fibre,	6·25
Mineral matter, ash,	5·59
	100·00
* Equal to Nitrogen,	2·36

"Such a mixture as the one represented by the foregoing analysis could be made by a mixture of barley-meal, beans, and oil-cake, at less than one-fourth of the price charged for the before-mentioned cattle food. As to the stimulating properties contained in these foods, I am inclined to think their constant use is very questionable, and very likely to be productive of harm."

We cannot, however, disapprove of the manufacture of cattle food in the face of the active support given by the agricultural world to the judicious preparation of materials for special purposes, and as a means of economy. It appears that there is scope for such a trade, and the Editor of *Bell's Weekly Messenger* ventures as far as to say that—

"There is no branch of agriculture that affords so much room for chemical investigation and practical judgment as that of cattle-feeding. What is the use of our learning to produce immense crops of roots and green food—in doing which their chemical characters are altered—if we neglect to inform ourselves how they should be eaten when we have got them? As barley will not grow stiff and bright after these excessive crops, so animals will not fatten on them in some seasons without auxiliary extraneous qualities. The differences of the influences of good and bad seasons on the roots of a farm, and of these on the stock of it, is well known. The heavier the crop grown, the more sensitive and susceptible they are. The slightest shortcoming in point of ripening, from want of sun and warmth, may make pounds an acre difference in the value of crops for feeding purposes. The bare spots on the highly-fed beasts at Leeds were attributed to the bad quality of the corn grown in the wet and sunless seasons of last year. The slightest addition of properly-chosen and prepared food, that had been grown in warmer climates, would have kept the skins of the Royal show beasts in healthy condition; and the same judgment displayed in regard to acrid rape, swedes, and mangold, would make their chemical proportions equal to the growth of the finest seasons."

In urging our professional brethren not to aid those who plunder mercilessly by the manufacture of filthy combinations of poor food and physic, we also would wish them to assist in eliciting truth by having such compounds in the market, as may be commended for their reasonable cost, also tested as to their effects on different animals in health and disease. The influence of veterinarians in this respect is great, and may they wield it for the common good.

PROPOSAL FOR AN AGRICULTURAL SHOW IN EDINBURGH.

We cannot allow an important communication which appeared under the above head in the *Scottish Farmer*, to pass unnoticed. The suggestion appears to us excellent, and we trust that many of the enterprising and enlightened farmers of the Lothians may at once take measures to ensure a show in Edinburgh in 1862.

So far do we approve of the scheme, that in accordance with the view which evidently suggested that prizes should be given to the best stacker, thatcher, mower, hedger, and drainer, we would offer prizes to the best horse-shoers, after the example of the Cleveland Agricultural Show. Hints, however, are insufficient. Let us have an organised movement, which, if prudently initiated, must prove irresistible.

"The recent seed show held at Edinburgh is on all hands admitted to have been a most signal failure. When we hear of the sum of 19s. having been drawn at the door of an agricultural meeting in the metropolis of Scotland, the fact speaks volumes for the unpopularity of the exhibition. Had it been tried on the morning of a market day, and the prize samples pitched afterwards in the corn market, perhaps the results might have been different, even although the domestic coin had not been levied at the doors.

"We should hope that, if the experiment is again repeated, it will be tried upon a Wednesday. There is ample time for the judges between nine o'clock and the hour at which the market opens. We cannot, however, see the use of so many small agricultural exhibitions, holden from time to time up and down the Lothians, considering the difficulties that exist in getting judges brought from a distance. In one case, we heard a judge at one of these county meetings lately declare that it was a shame to bring people so far for such a shabby affair; and, as for himself, he would not come again to the same place, on any consideration.

"Can we not get up one large and successful meeting in the three Lothians, instead of ten small ones? Formerly, when we had no railways, the distance was an obstacle, but this difficulty is now entirely removed. What we propose is an annual autumn show—say about the end of September or beginning of October—for the Lothians, to be held at Edinburgh, and to comprise cattle, sheep, horses, pigs, poultry, corn, roots, seed, butter, cheese, and implements. The autumn is, we think, a very desirable season for holding a show, as we then can exhibit samples of the new grain and roots. If a good place is got for the show, and the meeting is properly advertised, and facilities given to the great implement-makers for showing their goods, not straggling them over the show-yard; and if the aristocracy will only come out, which they cannot well refuse, and let them and our county members come and attend the dinner, for of course there must be a dinner, and we see no reason why there could not be a very creditable agricultural meeting held every year at Edinburgh. As for enlisting the sympathies of

the Highland Society, it would be a subject for consideration, and would depend upon circumstances.

"We should purpose raising the prize moneys by subscription, giving in each class the name of the individual who gives the prize, as is done in some of the shows in Lanarkshire. We have little doubt but that many of our townsmen will give L.1 say for the best crock of salt butter. We shall begin ourselves by offering prizes in a class comparatively new in Scotland—viz., to the best stacker, thatcher, mower, hedger, and drainer. We think such a season as a show week a very proper one for stimulating the industry of our labourers. We shall not further enter into the various branches of husbandry which could be brought into the foreground at such a meeting as this, but we feel certain that a very fair prize-list could be got up from the many wealthy residents of Auld Reekie. If we only put our shoulders to the wheel, and go about the matter in an earnest sort of way, I am sure our town friends cannot refuse to countenance the labour of the sons of the soil.

"We throw out these hints in order that some abler hands may take up the subject, and we look for support from those who have viewed the working of well-managed societies in the sister countries, and who would be willing to try and imitate them, for, as to surpassing them, that, we believe, is now quite out of the question.—S."

THE TURKISH BATH AND THE TRAINING OF RACE-HORSES.

We give the following extract from a letter by Mr Charles Moir, V.S. of Cardiff, addressed to the Editor of the *Irish Country Gentlemen's Newspaper and Agricultural Review.*

We are not aware of the extent to which Mr Moir has seen the Turkish bath tried, but from the general practical tone of his letter, infer that he writes under the guidance of experience.

No time can be more propitious than the present to elicit information in point; in this *Review* for May last, suggestions, by way of caution, were made, at a time when praises and predictions on the value of the Roman bath for training purposes, were freely published, unwarranted by the then limited experience; at that time the bath was under trial at many training establishments; and now that season has passed, reports of trials, and opinions formed in connection, would be most acceptable. Mr Moir says:—

"A great deal has been said and written concerning the ways and means used for the training of race-horses, and knowing the great interest you take in the same, and the courtesy with which you open your paper for the insertion of any article bearing upon that subject. I am induced to forward you a few lines for insertion, which I trust will be of some benefit to your readers; at all events they can do no

harm, if they do no good. As we live in an age of progression, man, with his master mind, seizes upon any object, however small, which has a tendency to perfect whatever branch of profession or business he may be connected with, and often reduces to practice that which may have, for a long time, been merely theoretical. Till within the last few years the practical use of the Turkish bath was unknown in this country, at least to any great extent. It was known only to those who had travelled abroad, and enjoyed the luxury, according to some, and the punishment, according to the testimony of others, of sitting on a flue, in a room filled with heated air, till the perspiration streamed down over the face, and the whole body to be afterwards rubbed over with a hair glove and washed well with water. Letting every person enjoy his own opinion with regard to the invigorating or enervating effects of this process of ablution, the question arises, how will it assist in the preparation of race-horses? I would say, not at all, as it is only by the judicious working of the horse, from day to day, that he will attain that hardness of muscle, that clearness of wind, and that glossy appearance of the skin, indicative of health, which characterise a race-horse when brought to the post in good condition. The Turkish bath will no more assist in the preparation of a race-horse to run a race, than it would prepare a labourer in a large forge to wield a heavy fore-hammer for a whole day with ease to himself; and as well might a Turkish pacha, who has the benefit of the bath daily, try to run with Mills or Deerfoot a ten-mile race. He would have as much chance as a horse would prepared in the same manner against one prepared in the usual way. But uninitiated persons may inquire how is it that the Turkish bath was introduced? Why was it required in the preparation of a race-horse, if the old system was so much superior? The only answer we could give was, that a great many of our best horses were unable to be brought to the post in consequence of their legs giving way, and it was to obviate the necessity of sending them four miles at a good pace, with heavy blankets upon them to take away the superfluous flesh, that the Turkish bath was introduced. Then arises the question, how is it that so many horses give way in their legs?"

We shall not attempt to solve Mr Moir's question; what is wanted now is not opinions without evidence, but facts relating to past trials; after collecting the opinions formed by those who have used the Turkish bath, its adoption may be limited, discontinued, or extended, according as the evidence suggests.

ROYAL COLLEGE OF VETERINARY SURGEONS.

—c—

QUARTERLY MEETING OF COUNCIL.

At the Quarterly Meeting of the Council, held the 30th day of October, 1861,—The President, F. R. Silvester, Esq., in the chair.

Present—Professors Spooner and Gamgee, Messrs Lawson, Cartledge, Mavor, Aitken, Burley, Wilkinson, Hunt, Gamgee, Robinson, Moon, Jex, Ernes, Broad, Dickens, Field, Kerr, Gabriel, Harpley, and Braby.

The minutes of the last meeting having been read and signed by the president,

The balance-sheet of the finances of the College being laid before the Council, it was moved by Mr Ernes, and seconded by Mr Robinson, "That it be received." Carried.

Moved by Mr Gabriel, and seconded by Mr Jex, "That it be adopted." Carried.

It was moved by Mr Wilkinson, and seconded by Mr Lawson, "That bye-law 27 be suspended during the last meeting of the Board of Examiners for Scotland, more particularly that portion of it relating to the time of depositing certificates with the secretary."

An amendment was proposed by Professor Spooner, and seconded by Mr Mavor, "That bye-laws 27, 28, 29, 30, and 31, be suspended during such examinations," which, on being put to the vote, was not carried.

After considerable discussion on the subject, and there being no evidence before the Council, the secretary not having any documents in his possession respecting the meeting of that Examining Board as to its illegality,

It was moved by Mr Ernes, and seconded by Mr Field, "That the further consideration of Mr Wilkinson's motion be continued at the next meeting of the Council."

The appointing of a secretary was next taken into consideration; it was ordered by the Council that advertisements be inserted in the veterinary journals, and some of the leading newspapers, stating that the election of that officer would take place at the quarterly meeting to be held in January 1862, and that all particulars relating to the duties, &c., of the secretary, could be obtained at the College, 10 Red Lion Square, Holborn.

It was proposed by Professor Gamgee, and seconded by Mr Burley, "That a committee be formed to consider what steps should be taken to protect the interests of the profession." The committee being named, the motion was carried.

Edw. Braby, *Secretary, pro tem.*

PERISCOPE.

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ON FEEDING OFF DISEASED TURNIPS, RAPE, &c.

(From the Scottish Farmer and Horticulturist.)

We often hear the homely remark—"What a pity it is that fine weather should do any harm." Yet so it is; and never within our recollection has more hurt been done to the growing crops than during the present season. The crops of turnips and cloverseed have suffered exceedingly. The crops of mangolds have been benefitted by the sunny season, but every other green-food crop is nearly destroyed, for it must be borne in mind that swedes when greatly mildewed are almost sure to rot if drawn or put into graves or heaps. This we attribute chiefly to the disease of mildew, or, as some will have it, of blight. We would caution all flockmasters to abandon all idea of feeding off such crops with lambs or young sheep; it is certain death to numbers of them, and most injurious to those which may have constitutions strong enough to live through a course of feeding upon such unpalatable and indigestible food. Our own experience, years ago, has given us abundant proof of this fact. One of our neighbours, only three years ago, ventured to feed off about thirty acres of coleseed, much affected with mildew and decayed leaves. He estimated his loss at fully L.200, although he took the precaution of mixing older sheep with his lambs. It may appear very dogmatical to make the assertion, but we do it advisedly when we say it is to no useful purpose, but a certain ultimate loss, to consume such truly unhealthy food as decayed coleseed with lambs; shearlings will scarcely live upon such food, and only two and three shear ewes will do tolerably upon it; but undoubtedly these would be rendered unhealthy, and liable to slink their lambs, or be in much danger of inflammatory attacks in the ensuing lambing season. The same remark will apply to the turnip crop, but not to the same extent. In this case the lambs will not thrive much, owing to the decay of the leaf, for it is the leaf chiefly that supplies those properties which go mainly to make bone. The bulb, if nicely cleaned and cut, is not by any means so indigestible as the diseased leaves and stems, and may be profitably given to young sheep, taking care to throw away or destroy the rotten bulbs, and any decayed portions likely to prove injurious. It may appear wasteful, but it is best to err on the safe side. When once a flock is rendered unhealthy, it takes much time to effect a restoration.

But many will reply, and ask, "What are we to do? We have no other food, and must resort to these diseased crops. We want to know the best and safest course to pursue in feeding them off." On this point, we beg to offer one or two plain suggestions.

Our first is, to set apart, or choose, the best and least-decayed parts of the crop for the lambs—*i.e.* hoggets—and give them, whilst feeding upon it, at least a quarter of a pound of good linseed cake each per day. Let them have free access to common salt; or, what would be better, give them plenty of cut chaff from oat-sheaves and hay, slightly salted. After they have been upon this keeping a week or two, give each of them a mild diuretic and purgative drink, which every chemist knows how to prepare, and also to advise as to the administration of it, the chief ingredients being Epsom salts, ginger, turpentine, and water (our own prescription we give at foot.)* This drink should be repeated as often as the judgment of the flockmaster dictates. Should any serious loss arise amongst them, he must remove them immediately for a time, say three or four days at

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* 36 oz. sulphate of magnesia (Epsom salts.)
24 oz. nitrate of potash (nitre.)
24 oz. turpentine.
3 oz. bolearmenic. This is of no use but to colour water enough to make a gallon, for the drink for 150 lambs, which will be about 1 oz. each.—J. C.
—"*A Practical Farmer*" *in Mark Lane Express.*

least, and give them the drink, and mangolds, cabbage, or such other food as he may have provided. We name this in passing, as we hold a flockmaster to be unmindful of his business, if he has not, in these modern times, provided a variety of food for his flock. The thing is general; and, therefore, we advise the change accordingly, and that as often as appears to be requisite. We are at the present time feeding off a field of coleseed, which six weeks ago was everything that could be desired in a crop, all full and good; but now, two-thirds of it are much injured by decay and mildew. We have a field of forward grass seeds nearly adjoining. The lambs are changed from one to the other daily, and thus get on nicely. In another case, we have a field of mangolds, the thin places being filled up with cabbage. The mangolds are led off; but the leaves and cabbage remain. These are feeding off, with the coleseed, by another lot of lambs, which are also doing well.

In feeding off such diseased crops with older sheep much caution is also necessary; but there is not so much danger as with younger ones. Aged ewes thrive the best; but none will thrive upon such keeping, without artificial aid—*i.e.* cake, corn, hay, or even straw; and a change of food occasionally would be very advantageous to other sheep. These remarks chiefly refer to feeding off the diseased coleseed crops. The diseased turnip crop is much less dangerous, but requires the same caution, and like resorts. The flockmaster, however, may, as we have said, make his selection of bulbs for cutting, and throw the bad away. We make this observation, also, because we now take it to be the universal practice to cut turnips for the flock, and we know it to be the best economy in every respect.

In feeding off these diseased crops with cattle, the like caution is requisite. Young calves and yearlings cannot feed upon this food with safety. It is to them as indigestible as with young sheep; and only the best of the coleseed or turnips should be supplied to them, and that sparingly. The usual adventitious aids must also be given—*i.e.*, cake, corn, millers' offal, or bran, hay, &c. For older cattle—*i.e.*, cows, drapes, heifers, steers, &c.—which are in good health, and strong in constitution, no great danger need be apprehended; but still, care and caution are very requisite. A good animal is soon lost. If his food will not digest, inflammation soon occurs, and he dies from the effects of bad food. The more inferior his food, the more of artificial aids he ought to receive, to counterbalance its injurious tendencies. It is by common and careful attention to these simple matters that safety is ensured, and much anxiety and disappointment is warded off. It may be superfluous to make the remark; but we would just say that when the crop manifests a decided change in the blue colour of its leaves, and a considerable number begin to turn yellow, it is then becoming unhealthy, and ought immediately to be fed off as fast as possible. The disease has fully set in, and will speedily destroy or most seriously injure the crop. Therefore, get all the stock of the farm to it.

REMEDIES FOR TAPEWORM IN ABYSSINIA.

By Dr Courbon.

(*From the American Journal of the Medical Sciences*, Oct. 1861).

The remedies for tapeworm stand at the head of the Abyssinian Materia Medica, and they are perhaps the only remedies that the Abyssinians are acquainted with, and that are really useful to them. Among these remedies, the kousso and mesenna must be ranked first, and afterwards the fresh bark of the pomegranate, the habi-tsalim, habi-tchogo, belbelta, and soaria. The *kousso* is furnished by a rosaceous plant of the tribe of the spiræas, and approximating to the genus agrimonia, and is called the *Brayera anthelmintica*. This is a beautiful dicœcious tree, terminated above by a bunch of leaves, and with long, pendant bunches of flowers. The latter are the parts employed, and the dose is a handful. The Abyssinians reduce the kousso into a coarse powder, and swallow it mixed with water. An hour after taking it, there is an ordinary evacuation, and half an

hour or an hour later there is a liquid motion, and at the end of three, or sometimes four or six hours, the tænia is expelled in the form of a whitish ball. The Abyssinians swallow the kousso fasting, and take no food until after the expulsion of the tænia, but afterwards they drink and eat abundantly, and use the most exciting kinds of food and drink. The *mesenna*, another remedy for tapeworm, was once supposed to be obtained from the *Juniperus procera*, but it is really the product of a leguminous plant, the *Albizzia anthelmintica*, a tree of some three or four feet high, with a thick and very rugous bark. The latter is the part used in medicine. The Abyssinians take it in various ways, but they always employ the powdered bark in the dose of about sixty grammes. They mix it with water, or they make into bread with flour, or they incorporate it with butter or honey, so as to form a kind of bolus, which they swallow. The consequence is, that on the evening when the drug is taken there is a semi-solid motion, in which there are some fragments of the worm. It is only on the next day and the following days that the rest of the tænia is expelled in sero-mucous evacuations. The mesenna is said to be the best remedy for tapeworm, and completely expels this parasite from the body. The *habi-tsalim* is obtained from two kinds of jasmine—the *Jasminum Abyssinicum* and the *J. floribundum*—and the leaves are the parts employed, mixed with the young shoots of the *Olea chrysophylla*, a kind of olive. A handful of this mixture is pounded very carefully between two stones, with the addition of a little water, and thus a kind of liquid paste is obtained and swallowed by the natives. It is said to be very efficacious in expelling the tænia. The *habi-tchogo* is now proved to be the *Oxalis anthelmintica*, a handsome plant with a subterranean stem, terminated by an oval bulb of the size of a chestnut. The bulbs are the parts employed, in the dose of sixty grammes or more; the Abyssinians eat them by handfuls like small onions, or bruising them on a stone, they mix them with fluid, and drink the juice after it has been strained through them. The *habi-tchogo* is said to be almost as efficacious as the kousso. The *belbelta* belongs to the family of *amaraniacæ*, and is said to be obtained from the *Celosia adoensis*. According to Schimper, the leaves, flowers, and fruits are employed for the tænia; but MM. Ferrel and Galinier state that it is the powdered seeds which are used. The *soaria* is a small shrub belonging to the family of the *Myrtaceæ*, and is the *Mœsa picta*. The part employed is the fresh fruit, or the same part dried. The *roman* is the native name of the *Punica granatum*, or the pomegranate. In Abyssinia, as in Europe, the bark of the root is the part employed, but it is rarely used. Among all these remedies for tapeworm, the kousso, the mesenna, and the habi-tchogo are almost the only anthelmintics employed by the Abyssinians.—*Brit. and For. Med.-Chir. Rev.*, July, 1861, from *Bull. Gén. de Thérap.*, April 30 and May 15, 1861.

ON SUPERFECUNDATION AND SUPERFŒTATION.

By Dr Kussmaul.

(From the same.)

Dr Kussmaul distinguishes superfecundation from superfœtation, and he proposes the word "superimpregnation," in order to express a new conception, which has happened during the course of pregnancy. The author discusses the following four questions:—

Is it possible that during pregnancy new ovules can become mature and detach themselves from the ovary?

Is the state of pregnancy of a matrix simple, or of one of the halves of a double one, an absolute obstacle to a second fecundation?

What is the value of the facts recognised up to the present time relating to the result of superfœtation in a simple or double matrix?

The following are the results of researches to which Dr Kussmaul devoted himself regarding this argument:—

1. We must distinguish superfecundation from superfœtation, and unite both these phenomena under the name of superimpregnation.

2. There is superfecundation, if, in consequence of several intercourses of the sexes, there is fertilization of several ovules which have been matured during the same period of ovulation. This phenomenon is proved in the horse, and exists in all probability also in man.

3. Superfœtation would take place if an ovule of the second or any other period during pregnancy could be fertilized, but until now the possibility of this fertilization has not been established with certainty in woman, because it is proved that ovulation exists in women generally during pregnancy, and that all cases considered until now as superfœtations are open to other interpretation.

4. We possess up to the present time no authenticated case of any individual superfœtation in extra-uterine pregnancy. Supposed cases of the sexes are explained by the fecundation of two ovules from the same period of ovulation, which are developed on different points in consequence of a new fecundation after the death of the embryo which was developed outside of the uterine cavity.

5. We possess no positive evidence that a woman whose matrix did contain a dead fœtus was able to conceive.

6. Neither the membrane nor the mucus which obstruct the cavity of the neck of the uterus, could be considered as an absolute obstacle to superfœtation in a single or double matrix.

7. The only obstacle which opposes the passage of the seminal liquor in a simple matrix in a state of gestation is the embryo itself, when it fills up the uterine cavity and closes the openings of the oviduct. In a double matrix nothing can hinder the passage of the seminal liquor in that part which has not been impregnated during the time of pregnancy.

8. The most probable facts with regard to superfœtation are those relating to the birth of twins at long intervals; but these facts can be explained as the birth of twins, one of which was too forward, the other late; that is to say, the one took more time than the other for complete development.—*Dublin Med. Press*, Aug. 25, 1861, from *Presse Méd. Belge.*

Journal des Vétérinaires du Midi. March to July, 1861.

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V.—Urethritis in a Calf. By M. Guimberteau, Veterinarian at St Antoine.

This is the report of a case to which M. Guimberteau was called in consequence of a gradual falling off in appetite and condition, which had continued for two months. The patient, which was only eight months old, was dull and debilitated, with a harsh staring coat and pale mucous membranes. The respiration was much accelerated, the pulse small and quick, and the action of the heart irritable and loud. The abdomen was greatly enlarged and fluctuating, so that ascites was diagnosed. The animal was slaughtered, but on opening the abdomen not a drop of fluid escaped. One of the ureters, however, was enormously distended, and on being punctured, discharged nearly eleven gallons of clear liquid. Near the entrance of the ureter into the bladder, it was rendered impervious for about an inch and a-half by a thickening of its walls, evidently the result of previous inflammation. The thickened parietes had a nearly cartilaginous consistency when cut into.

VI.—Tuberculous Affection of the Liver, complicated with Phthiriasis. By M. Clavel, Veterinarian at Villefranche-de-Belves.

The above affection was noticed in a five-year-old ox, to which attention was first called by want of appetite, occasional tendency to hoven, and an unhealthy condition of the skin, which was covered with lice. The latter condition was ineffectually combated by tobacco. The patient became daily duller, weaker, and more emaciated; hidebound ensued, with dry staring coat, great sensibility

of the loins and vertebral column generally; the axillary lymphatic glands were enlarged, and the buccal mucous membrane the seat of considerable inflammation. The fæces were harder than natural, but the majority of the vital functions seemed normal.

The enlarged lymphatic glands, tenderness of the skin, gradual emaciation, and staring coat would have indicated phthisis, but no cough existed, and careful examination of the chest could detect no abnormal condition.

The stomatitis was treated by acidulated and saline solutions, with the effect of almost completely curing it in the course of seven days, and by the same time the condition of the fæces had become almost normal. Tobacco decoctions had meanwhile been applied externally, and tonics, with nourishing diet, were now prescribed, but the patient died suddenly on the day following, immediately after finishing a diet.

Autopsy.—On opening the abdominal cavity, the protruding omentum was found to contain a large number of milliary tubercles disseminated throughout its serous layer. The mesenteric glands were nearly all tuberculous, some being the size of walnuts, and formed of non-softened tubercle, others as large as turkeys' eggs, and softened. The liver was enormously enlarged, weighed over 69 lbs., and was almost entirely tuberculous. Some of the tubercles were small and indurated, but the majority had already reached the stage of softening. Many of the tuberculous cavities would easily have contained the closed fist, while two or three were of a capacity equal to that of the head of a child two or three years old. The gall-bladder was shrivelled up, and contained only a very small amount of bile. The rumen contained a large amount of food, and on its mucous membrane several patches of acute and chronic inflammation were observed, the former indicated by the red or brownish epithelium, the latter by the discoloured epithelium and thick infiltrated mucous membrane.

The lung was nearly or completely free from tubercle, but the bronchial glands were much enlarged and in a tuberculous condition.

VII.—Formation of an Artificial Canal in Obstruction of the Stenonian Duct. By M. Mottet, Veterinarian at Soissons.

A carriage gelding, six years old, was placed under M. Mottet's care, in consequence of a voluminous cord having appeared inside the left ramus of the lower jaw. The rolling and fluctuating character of this cord led to a diagnosis of an obstructed stenonian duct. The tumour becoming daily larger, and interfering with mastication, M. Lafosse's operation was decided on. An incision having been made into the tumour at the lower margin of the lower jaw, a large quantity of saliva escaped. The bistoury was then carried upward along the course of the canal, which was found filled with a yellow fibrous material. A fistula needle, bearing a thread, was then carried upward in the same direction as the canal, with its point directed to the external aspect of the lower jaw, the tongue being meanwhile pulled to the opposite side of the mouth. The needle having pierced the mucous membrane, one end of the thread was pulled through, and having been carried round the commissure of the lips, was tied to the other end which still hung from the external wound. Notwithstanding this cord was made tight, it was several times cut through by the teeth, and in the end a similar cord was simply drawn through the canal, and allowed to project a slight distance from each wound, so that it might be readily withdrawn when desirable. The operation was so successful, that in twenty days the dilated canal had contracted, the saliva flowed through the artificial canal, the external wound had closed, and, in short, a complete cure had been effected.

VIII.—Inward Dislocation of the Patella in a Mare. By M. Perardnaud, Veterinary Surgeon to the Military Train.

This is a report of this very uncommon lesion, observed at Leguevin, in a young Brittany mare well gone in gestation. M. Perardnaud's attention having been

called to this mare, he found that she could not support herself on the off hind limb, which was extended and carried backward. In place of a prominence in the natural position of the patella, there is in reality a depression. When the animal is moved, the limb is dragged in a painful manner, and the head depressed to throw as much weight as possible on the fore extremities. The inner side of the stifle is painful, but the outer bears pressure tolerably well. On the latter aspect no indication of the patella was found, but on the infero-internal aspect of the femoral trochlea was discovered a hard body, the form and connections of which showed that it was the missing bone.

After certifying himself of the truth of his diagnosis, M. Perardnaud proceeded to attempt reduction of the dislocation—a difficult operation from the great size of the internal part of the trochlea. Three assistants were obtained, of which one flexed the limb, a second pressed the stifle backward, while the third steadied the animal toward the right side. The operator placed himself on the right side with his hand on the patella to push it forward and outward during flexion of the joint. Extreme flexion of the limb having been induced, the patella was, by the first attempt, placed on the summit of the inner part of the trochlea, and, on a second attempt being made, started into its place with a particular noise. The limb at once assumed its natural appearance, but after a time there resulted considerable sympathetic fever. An ammoniacal liniment was rubbed over the part to cause engorgement of the skin, and to act as a bandage, and after a short time no trace of the lesion remained.

IX.—Cerebral Apoplexy in the Horse. By M. Pigeaire, Veterinarian at Marsillargues.

M. Pigeaire was called to see this case three hours after the onset of the malady. The subject was an eight-year-old horse, in good condition, and accustomed to rapid work in a carriage. He had been taken ill immediately after partaking of a full diet.

The whole left side was paralysed, and on that side the horse supported himself against the wall. He was completely comatose, with his head pendulous, which continually oscillated from side to side. The facial vessels are engorged, the conjunctiva injected, and the eyes fixed. Sight and hearing seem abolished, the nostrils are dilated, respiration accelerated, and the pulse full and slow. The whole indicated cerebral apoplexy.

Twelve pounds of blood were abstracted, and cold water applied to the head. In the course of two hours improvement was manifest, but fifteen more pounds of blood were withdrawn, and the cold to the head continued. Next day the paralysis had ceased, sight and hearing were partially restored. Gruels were allowed, cold continued to the head, a blister placed over the haunch, and stimulant injections thrown up. On the third day the animal fed a little, and on the fourth deemed so far recovered that all further treatment was suspended. On the eighth day he was put to work, and continued well.

X.—A Cause of Hoven in the Larger Ruminants. By M. Joyeux, Veterinarian at Mansle.

In this paper M. Joyeux endeavours to show the true cause of hoven among animals feeding on clover. He holds that this condition is most frequent when the clover grows on naturally poor, very dry or calcareous soil; or on land exhausted by severe cropping, want of manure, and insufficient cultivation. It is also most common in animals fed on the second crop, and when that has been brought to maturity by frequent showers, so that it is more bulky than nutritive. The slow growth and imperfect nourishment in such cases leads to the production of an inferior plant, the leaves of which are destitute of the normal healthy colour, and which does not undergo rapid decay when cut or ploughed down. Even this, however, does not prove so injurious while yet green, in an early stage of the season, and when the temperature is low. The greatest danger

exists after long drought, during which the plants have been rendered pale yellow or brown, from a continued daily exposure to a hot, dry atmosphere, when heavy dews or abundant showers succeed.

Ingesta from such pasture is more or less fermentescible, according to the thermometric and hygrometric condition of the atmosphere. In the morning, when the dews are being rapidly evaporated by a powerful heat, and when the leaves begin to droop around the stem, hoven will take place in an incredibly short time. In twenty or thirty minutes after commencing to feed, and when they have not taken a quarter of their accustomed amount, animals feeding on such may become fatally hoven. Much more may be taken in when the grass is still very wet, and the temperature low; but although more tardy in developing itself, the succeeding hoven in such a case is no less severe, but corresponds to the amount of food in the stomach; and the condition is further aggravated by the bulk of the food itself. This difference may be accounted for by the fact, that the one is cold, soft, and contains much water, consequently less susceptible of fermentative change, while the other is warmer and less mixed up with fluid, and consequently more readily fermented. That a fermentescible body and ferment are present, is evident, and of necessity the changes taking place in these are subject to the same laws as control them out of the body.

M. Joyeux offers the following explanation of alleged more injurious consequences of clover grown on inferior soils. When the temperature has been very high for several days the plants cannot abstract support from the exhausted or originally inferior soil, and rapidly dry up. The atmosphere in such parts is impregnated by exhalations from the soil, and decaying substances on its surface. These are carried down with the rains and dews, and are absorbed by the plants, especially such as are dry, and have their vascular ducts empty. Such plants, accordingly, have those noxious principles carried down with the rains, disseminated through their structure, and these act as ferments as soon as the plants are placed in circumstances favourable to the development of fermentation.

Green and juicy plants are not so injurious, since, from having well-filled ducts, they cannot absorb the rain so abundantly, and have not the ferment deposited so plentifully in their tissues.

Our author recommends that cattle should never be turned on clover in the dangerous condition above indicated, but that the crop should either be ploughed down or cut, and allowed to rot. In either case the succeeding crop would amply compensate for the present loss.

XI.—Pityriasis in the Horse. By MM. Marly and Causse, Veterinarians, 11th Chasseurs.

This is a report of a skin disease observed on upwards of twenty horses of various breeds, chiefly black or bay, and four or five, though in some few cases as much as eleven years old. It chiefly affected the face, the neck towards its superior border, the sides of the chest or abdomen, the flank, the croup, the inner sides of the thigh, hock or metatarsus, and the hollow of the pastern.

Generally, the affected animal presented circumscribed patches, frequently eliptical, but very irregular, well-defined at their margins, and more or less completely denuded of hair. The epidermis was being separated in whitish scabs. There was little or no itching, and the general health did not seem at all affected. The eruption progressed from the centre of the patch to its circumference. The patches vary in size from one to three inches in diameter. The hair is gradually thrown off. The scales have first the appearance of farina, but afterwards come to resemble bran of medium size. The duration of the eruption is from fifteen to thirty days, and it always terminates in recovery.

Neither vesicles, pustules, nor animalcula could, at any time, be discovered on the skin, nor was there any thickening of the latter covering. There only appeared the desquamation of the epithelium, the unhealthy condition of which seemed continuous with the hair bulbs, leading to depilation of the affected parts.

The sweat glands likewise seemed affected, since the diseased patches were drier than the healthy skin.

The causes of the malady are by no means evident. It affected all breeds, but seemed most common on those of a black colour. It was more frequent in young horses, though when the old became affected it was more inveterate. The animals seemed especially liable in spring, about the time of shedding their coat. Contagion had not the slightest influence in propagating it.

This malady cannot be confounded with the exanthemata, or similar non-contagious maladies in which a greater or less turgescence of the skin is followed by depilation and desquamation. Nor has it any analogy to vesicular, parasitic, or other contagious maladies of the skin. There is neither bullæ, pustules, papulæ, pimples, nor pruritus. It would seem that to no cutaneous disease can these cases be more rationally referred than *pityriasis*, in which from a chronic inflammation of the superficial parts of the skin there is desquamation of the epidermis, shedding of the hair, and dryness of the part affected.

By friction with mercurial or sulphuro-mercurial ointment, and the application of alkaline lotions, cures were easily effected.

XII.—Vomiting in the Horse without Rupture of the Stomach. By M. Gilis, Veterinarian at Molières.

This case occurred in a nine-year-old Brittany mare, in good condition, and the property of the Mayor of Molières. The subject had drunk well of pit water, and greedily eaten her food immediately before being taken ill. She was suddenly seized with violent colic, and severe retching, accompanied by the rejection of food from the nostrils. There was extreme anxiety, hot skin, complete anorexia, great heat of the mouth, and redness of the tip and margins of the tongue, the loins were rigid, the abdomen tense, the mucous membrane injected, the pulse full and hard, the nostrils dilated, and the breathing accelerated, noisy, and difficult. All the ordinary symptoms of colic were present, and the fits of retching succeeded each other with intervals of four or five minutes. The material ejected by the nostrils was a reddish fluid mixed with alimentary matters. The fits of vomiting were extremely painful, and vomition was frequently followed by a deep painful cough. In the course of an hour great prostration ensued, with impaired vision, violet colour of the mucous membranes, and cold sweats. The respiratory murmur was diminished in some and increased in other parts of the lungs. Alimentary matters continued to escape from the nostrils during all the day following, though retching had almost entirely ceased. On the third day (forty-two hours after the commencement of the attack) death took place, preceded by a flow of black blood from the nostrils.

On examination three hours after death, the stomach was found of ordinary size. The mucous membrane of its right side was thickened, of a violet colour, and bore eight ulcers averaging in size that of a five-franc piece. The cardiac orifice was relaxed, as also was the œsophagas to some distance in front of it. Patches of inflammation existed on the peritoneum, colon, and small intestine. The thoracic portion of the œsophagus contained some alimentary matters.

The diaphragm had sustained several lacerations varying in length from two inches to nearly the whole breadth of the tendinous portion. In no case, however, were the margins of the wounds separated to any great extent. The liver was much congested, and broke down readily under the fingers.

The posterior two-thirds of the lungs were congested, and the mucous membrane of the trachea discoloured by the presence of blood upon its surface.

OBITUARY.

DEATH OF MR ANTHONY GREEN.—VERDICT OF "WILFUL MURDER."

(From the Melbourne Examiner.)

An inquest into the cause of the death of the late Mr Anthony Green, veterinary surgeon, who was killed on Thursday by a blow from a blacksmith's hammer, was held by Dr Youl, the City coroner, at the Governor Arthur Hotel, Little Bourke Street, on Monday morning. The affair had evidently excited a great deal of interest, for there was a large crowd in the neighbourhood of the hotel throughout the whole of the proceedings, and the announcement of the verdict of the jury was eagerly received by several hundred persons who occupied the street. The following was the evidence taken after the jury had formally viewed the body:—

Margaret Garity, servant to the deceased, identified the body of her master. She described him as being thirty-eight years of age, and added that he had left a widow and several children.

Mr Samuel Cole deposed as follows:—I am a publican at Ivanhoe. On last Thursday afternoon, at about four o'clock, I was standing at the shoeing-shed in Kirk's yard with the deceased, who was giving some instructions to the blacksmith at the time about the paring out of the horse's feet, the shoes of which were about to be shifted. Several people were present, but I heard no one join in the conversation. Martin Rice came into the yard, at the Little Bourke Street entrance while we were talking, and spoke to me. He began to find fault with the horse's shoeing. He only spoke to me at first, and said nothing to Green. He began to say that the way we were speaking of shoeing the horse was wrong, and that there was no such thing in the whole country. He said Green knew nothing about it, and I replied that Green had nothing to do with the affair, as the horse was being shod under my instructions. Some dispute arose about a horse bolting at a fence, and Rice said it was not with his fore feet that a horse slipped. He then talked about his experience in the old country, adding that he had forgotten more about horses than Mr Green had ever learned. Mr Green spoke very reasonably at first, and at last told Rice that if he would not talk in reason he had better go away. An altercation ensued, and Rice kept on getting up to Green's side, when the deceased said, "If you don't go away I shall hit you in the mouth." Mr M'Candlish came in at the double doors at the time, and Rice pointing to him said, "Here is a man that knows more of a horse than you do. He knows something, and that is more than Green does." After Mr Green had told Rice two or three times that if he did not hold his tongue and go where he was wanted he (Mr Green) would strike him, and Rice had taken no notice, but continued his offensive remarks, Mr Green did strike him in the mouth. Rice stood before Mr Green for several moments after the blow was struck, but never attempted to strike in return, or even to say that he would do so. The blow was with the closed fist, but it was not a heavy one. It struck Rice in the face. Rice muttered something, and began to cry like a child. Mr Green then begged him to go away on his own business; and after a little, the deceased went into his own house, leaving Rice at the forge. I remained about ten minutes after that, trying to get Rice away. I told him to go and wash his face, and offered him a bottle of lemonade at the hotel. I advised him to forget all about it. As I was doing so, Green came out of his house and asked me to go in and have a cup of tea with him; but I did not like to do so while Rice remained. I then tried again to get Rice to go away, but he refused, saying he would have his revenge. I stopped about a second after that, and saw Rice go up to Green's door, and try to go in, but Mrs Green shut the door in his face, and stopped him. With that Rice went to Green's window, and tried to look in, and while he was doing that I came away. I did not hear him threaten Mr Green so long as I was there. I suppose fifteen minutes elapsed between the

blow and my going away. Rice had been drinking, but was not much the worse for liquor. Had I not known him before, I should not have thought that he was intoxicated. What I mean by saying that Rice did not threaten Mr Green was, that he did not say how he would take out his revenge—whether he would kick him or strike him, or such like.

William Howard, a boy of about twelve years of age, deposed as follows:—I am a jockey, and was in Kirk's yard on Thursday afternoon, about half-an-hour after the first row. I met Mr Cole at the public-house after the row, and he sent me and another young chap to see when a horse that was being shod would be done with. I came over to the forge, and saw Mr Green standing by a horse, looking at the creature's foot, when Martin Rice came behind him with something in his hand, and struck Mr Green with it on the head. The thing was done so quickly that I could not see what was in Rice's hand. As soon as the blow was struck, Rice dropped what he had in his hand, putting it away from him, or else it fell from his hand with the stroke. As soon as he was struck, Mr Green fell alongside me. Rice went out of the yard, for a man pushed him away. As soon as this was done, I went over to M'Caw's yard. I can't exactly say what the time was when all this took place. It was not dark. I did not pick up what Mr Green was struck with.

Captain Octavius Skinner Burton, sworn.—I was in Kirk's yard on Thursday afternoon last, passing through, at about four o'clock or a quarter past, I could not say exactly. I saw the prisoner as though he was in the act of being pushed away from Mr Green's door. He advanced two or three times to the window, making use of frightful oaths, and calling Mr Green to come out, saying he was bloody this and the other. His violence was extreme. I can't say that he called on Green by name, but the language appeared to be addressed to him. This lasted for several minutes, for I waited, fearing that Mr Green was coming out. Rice's violence lasted all the time, and he had a blacksmith's rasp in his hand. He raised this in his hand as he challenged Mr Green "to come out of that," and at last dashed it out of his hand to the ground. I then left, satisfied that Mr Green would not come out. I mentioned to several gentlemen that there was a man wild to get at Green, so that I was satisfied the violence was meant for the deceased. I saw nothing more of the affair.

Anthony Tierney, sworn.—I am a groom, and was at the forge in Kirk's Bazaar, when the constables were brought in by Mr Green to take Rice. This was some time after Rice had been struck, but before Mr Green was touched. To the best of my belief the time was half-past four o'clock. The constables were brought in by Mr Green. They would not take the man, and I advised Mr Green to "drop it," saying he would gain no credit by having anything to do with Rice. Some time after I was standing with the deceased looking at a horse's feet, when I saw him tumbled over. He said he was killed. I turned round and saw Rice behind. I caught hold of him and hit him, giving him a couple of kicks, which sent him out of the yard. I did not see the blow, both I and the deceased having our backs towards the shop where Rice was. When I saw Rice he was in some attitude as though he would attack the deceased again, and I caught him and kicked him away. I saw nothing in his hand. I could not absolutely say that no one but Rice could have struck Mr Green, but I saw no one else so near the place. I could not hear Rice say anything. I saw nothing lying about with which Mr Green could have been knocked down. I saw no more than what I have described. Mr Green was saying to me that he wanted no one to interfere in his business, just before the blow was struck. He knew Rice was in the blacksmith's shop, but I heard him say nothing to excite Rice to make the blow. I and the deceased were not in the blacksmith's shop, but stood some four feet away from it in the shed where the horses are shod. The only person near us was the blacksmith attending to the horse's feet. I pitched into Rice because I believed him to be the man who struck the deceased, and I did not like to see anybody struck while down. When I looked up to see who struck the blow, Rice was the only man I saw. I was aware that there had been words between them, because I had heard the quarrel while I was at the back of

the yard. I did not see a hammer picked up, for after I had kicked Rice out of the yard, I went into Green's house and helped to undress him.

Thomas N. Fitzgerald.—I am a legally-qualified medical practitioner, and was called to see the late Mr Green at about half-past five o'clock on Thursday evening. He was in a very bad state, and much excited. He was sensible, and complained of a great pain on the right side of his head. He mentioned that he would kill the prisoner if he recovered, and expressed himself as much excited against him. He said he had been struck. The wound on the right parietal bone over the right ear was three-quarters of an inch in length. The edges were much puffed. On using the probe, I found that the skull was fractured, the bone being slightly depressed. There was no symptom of depression of the brain. I suspected rupture of an artery, and ordered cold lotions to the head. The deceased became gradually insensible as reaction set in, and in about three hours he was quite senseless. At about nine o'clock, Dr Wilkie met me in consultation, and we decided to remove a portion of the skull, and extract the blood. I produce the piece of the skull which we took away. (A piece of skull about an inch square was here exhibited.) On doing so, we discovered a large clot of blood resting on the brain, which had been pushed out, and we removed it. The breathing of the deceased became then much easier, and he appeared, on the whole, better after the operation. He, however, never became sensible, and never rallied. He died at about half-past ten o'clock on the following (Friday) night. I made a *post-mortem* examination sixteen hours after death. I saw no marks of external violence except on the head. There was a large quantity of coagulated blood between the scalp and the skull on the right side of the head, extending nearly to the forehead. I found resting on the dura mater on the right membrane of the brain a large quantity of coagulated blood covering nearly the whole of the right side of the head, and extending nearly to the base of the brain. The two branches of the meningeal artery were ruptured, which was the cause of the coagulated blood. They were ruptured at the seat of injury where I removed the bone. The fracture was a stellar one. I left no bone depressed. The fracture extended from the forehead to the base of the skull. It was a very bad one, being very extensive. There was a small clot of blood at the base of the brain. On opening the cavity of the chest I found all the organs healthy. The left lung was a little inflamed from an old pleurisy. The cause of death was pressure of blood on the brain, and fracture of the base of the skull produced by external violence. Such a fracture could not be caused by a blow of the fist. Even if the skull were thin the fist would not fracture it. The instrument causing the fracture must have been 2 in. in circumference, as there was a round depression on the skull to that extent. The hammer exhibited (a common blacksmith's hammer of the description technically called "catshead" was here produced) might easily have caused the blow, as it answers to the external appearances on the skull of the deceased.

William Robertson, sworn.—I am a blacksmith, and keep the forge in Kirk's Horse Bazaar. On last Thursday afternoon I was present at the first disturbance between Mr Green and Rice. It was a little after four o'clock. Their altercation was about the shoeing of a horse. I saw Mr Green strike Rice, after which Rice went back. I was in the forge, and saw no more of them when they went outside the shed. Some time after, I saw Rice walking to and fro between the forge and Mr Green's house, and using threatening language towards the deceased. I was working some time after, when Mr Green came up with some constables; and about half an hour after, I was paring a horse's foot, with Mr Green and Tierney looking on. I was cutting off from the forefoot of a horse when Mr Green was struck. I heard Mr Green say that he had many friends in the yard; and Tierney replied that he had never been obliged to him that he knew of. I was very busy indeed that afternoon, and took very little notice of anything but my work. I saw Mr Green fall, but I could not see who struck him. When I looked up, Mr Green had screeched, and was on the ground, while Tierney had hold of Martin Rice by the hair of his head. The hammer produced is one I left in the forge. I always leave it lying on the anvil. I am quite sure it was not

in the shed. I picked it up just after Mr Green fell—about four or five feet from the forge door. The boy Howard pointed it out to me, saying, "Blacksmith, there's the hammer that Mr Green was hit with."

Thomas Johnston Bavin, sworn.—I was in the Governor Arthur Hotel on the afternoon in question, when I heard a screech. I ran out, and saw Tierney running Rice out of the yard. I went forward, and saw Mr Green being carried to his door. I helped, and as he saw me, the deceased said, "He has killed me, by God, Tom. He has knocked a hole in my head. I heard the bones crack, and can feel them breaking." I said, "Was it Martin Rice?" and Mr Green said, "Yes." I had supposed it to be Rice, after seeing the latter run out of the yard. The time this took place was, I should say, about a quarter past five o'clock.

Detective Black here informed the coroner that this was all the evidence that could be brought forward. There was one witness who could be called, but he was out of town just now. That gentleman was in a Collingwood car after the offence had been committed, when Rice got in too. A conversation about horses took place, when some expressions were made use of by Rice with reference to the present matter. What those expressions were, he (Black) could not of course state in the absence of the witness alluded to.

The coroner then summed up the evidence to the jury, calling upon them to decide whether there had been sufficient malice exhibited to induce them to return a verdict of "Wilful Murder." He particularly warned them not to give the prisoner the benefit of any doubt which might be on their minds, because, at the present stage of the proceedings, that doubt should always be given in favour of a further investigation, which, in this instance, would unquestionably have to be held at the Supreme Court.

After a short retirement, the jury, through Mr Hockin, the foreman, told the coroner that they had found a verdict of "Wilful Murder" against the prisoner.

A formal verdict was then drawn up, and the prisoner was committed to take his trial on the coroner's warrant.

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